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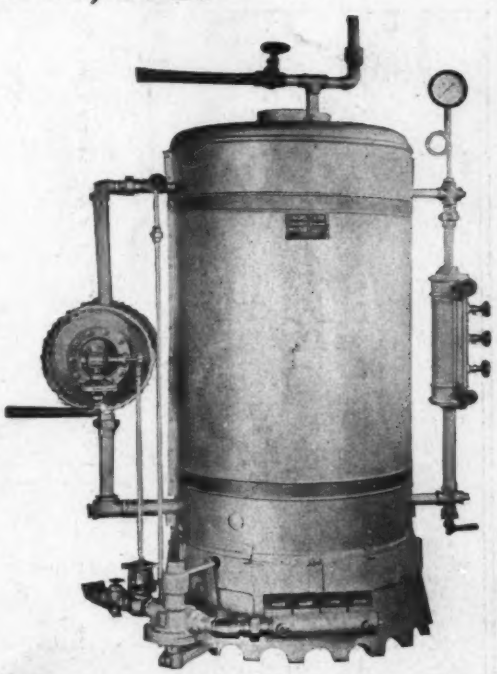

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Use of Gas in Coloring Brass Goods

Colors and Tints in Wide Variety Offer Many Opportunities for Efficient Use of Gas-Consuming Appliances of the Standardized Type Coloring Gas and Electric Fixtures — Frosting Old Work

By GILBERT C. SHADWELL

Gas has had its share of publicity in connection with the melting of brass, but in the more diverse subject of brass finishing little or nothing appears to have been told on the printed page. This class of work has a very wide scope as the field stretches over many industries. The processes include roughening, polishing, whitening, coloring, silvering, gilding, lacquering, frosting, mottling, dipping, pickling, blistering, and so on—truly a wide field.

The coloring processes are perhaps the most common and properly deserve a place to themselves in any such discussion as this, but as many of those processes are combined with others it is not quite so easy to separate them.

A recent article by the writer dealt with bronzing and we will consider what is called Barbediene bronze or brass. It is not strictly a bronzing operation, however, and was therefore not included in that article. The purpose is to fire a sort of brown finish to brass alone and the proceeding is as follows:

Freshly precipitated arsenious sulphide is dissolved in ammonia and antimonious sulphide is added until a dark yellow color is produced. The solution is heated carefully to almost 95 deg. Fahr., and the articles are left in this bath till they have acquired a dark brown color. This color is finally developed by scratch brushing, and often the surface is lacquered over and baked in a gas-fired oven in the usual way.

Steel Blue on Brass

Readers will find certain high grade brass goods which have a steel blue color. This is produced as follows: They dissolve 3 drams of antimony sulphide and 4 oz. of calcined soda in each 1½ pints of water. To this they add 5½ drams of hermes. It is then filtered and this solution is mixed with 5½ drams of tartar, 11 drams of sodium hyposulphite and 1½ pints of water. This mixture is warmed by placing it in a small tank or cauldron furnace. If polished brass articles are placed in this warm mixture they will quickly assume the beautiful steel blue color mentioned. After this is done they are washed in cold water, dried in a

FIG. 1.—SPECIAL GAS FIRED DRUM DRYER

gas-fired sawdust dryer and either left that way or lacquered and baked as usual.

A steel gray coating is obtained in a similar way except that the solution consists of antimonic sulphide and fine iron filings, 1 part of each; hydrochloric acid, 3 parts; of water, 3 or 4 parts.

Green Color on Brass.

The repeated alternate washes of dilute acetic acid and exposure to the fumes of ammonia will give a very antique looking green bronze effect, but a quick mode of producing a similar appearance is far more important and it is of interest. To this end the articles may be immersed in a solution of 1 part of perchloride of iron in 2 parts of water. The tone assumed darkens firstly with the length of immersion, and, secondly, with the temperature of the liquid, but this temperature should not go above 95 deg. Fahr. A water jacketed kettle is best, although direct heat can be used if desired. If not heated at all the change takes place more slowly.

The best method of all, however, and that more usually adopted, is to boil the articles in a strong solution of nitrate of copper. But there is yet another alternative and that is to immerse the articles in a solution of 2 oz. of nitrate of iron and 2 oz. of hyposulphite of soda in each pint of water. In each case, washing, drying and brushing completes the process unless lacquering is to be done, and then that can always follow if desired.

Miscellaneous Colors on Brass

It will probably save much of the reader's time if we list some of the miscellaneous colors which are produced upon brass and give the procedure in as concise a form as possible. No general rule is applicable to all colors, but this will not detract from the interesting features involved—in fact, it is believed that much the reverse will be found to be the case.

For convenience we will number the processes:

1. An orange tint, inclining to gold, is produced by first polishing the brass and then plunging it for a few seconds in a warm neutral solution of crystallized copper acetal. Dipping into a bath of copper the orange gold changes to a grayish green.

2. A beautiful violet is obtained by immersing the metal for an instant in a solution of chloride of antimony and rubbing it with a stick covered with cotton. During this operation the brass must be heated to a degree just tolerable to the touch, i. e., about 125 deg. Fahr. or thereabouts. This heating can be done in a warming oven, japanning, soldering oven, or any other type of oven available. The chief thing that matters is how the material should be handled and this will depend upon the size, quantity and weight of the articles to a large extent. A conveyor oven can be used if desired.

3. A "moire" appearance, vastly superior to that usually seen, is produced by boiling the object in a solution of sulphate of copper. There are two methods of procuring a black lacquer on the surface of brass. The first, which is usually employed by instrument makers, consists in polishing the object with tripolite and washing it with a mixture composed of nitrate of tin and chloride of gold, 2 parts. They allow this wash to remain for 15 minutes, then wipe it off with a linen cloth. An excess of acid increases the intensity of the tint.

In the second method, copper turnings are dissolved in nitric acid until the latter is saturated; the objects are immersed in the solution, cleaned and subsequently heated moderately over a gas stove or better yet in an oven. The old method was to use a charcoal fire, and this is probably still employed. If so, gas men can replace this old heating method. The last process has to be repeated to produce a black color as the first trial gives but a dark green. The final polishing is done with olive oil.

In the first method reference was made to the use of tripolite. This material, when dried, incidentally forms a valuable field for the use of gas and should not be overlooked. In Fig. 1 there will be seen a special gas fired drum dryer for drying this material. The dryer has a capacity of 8 lb. of dry powder per minute, and the gas consumption is 250 cu. ft. per hour. The heating equipment is seen at the lower end and the wet powder is fed in at the top. The flue gases pass through a central flue in the drum, and as the drum revolves the wet powder is gradually made to descend to the bottom. Incidentally, the tripolite falls in a direction contrary to that of the travel of the heat, thus giving the highest efficiency. When the powder is delivered at the bottom it is used for such purposes as referred to above.

4. The following is one of the compositions that turns out a rich color brass:

Take copper	1 lb.
Tin	1 oz.
Zinc	½ oz.
Lead	½ oz.

It is generally used on brass coatings and can be used molten in a crucible furnace heated by gas, but naturally a positive pressure blower will have to be employed. The time taken to give the color is from 7 to 20 minutes, depending on the tint (all the way from medium green to black) and the thickness of the coatings.

5. The fifth method is done with chloride of platinum. For this purpose they are first heated to redness and then dipped in a weak solution of sulphuric acid and water. Afterward the articles or pieces are immersed in dilute nitric acid, thoroughly washed in water and then put in a gas fired sawdust dryer and dried in the heated sawdust. In order to effect a uniformity in the color, the pieces or articles are plunged into a bath consisting of 2 parts of nitric acid and 1 part of chemically fine water (do not forget the gas-fired water still), where they are allowed to remain for several minutes. Should the color not be free from spots or patches the operation must be repeated until the desired effect is produced.

6. Copper and brass may be bronzed in various modes as have been outlined in a former article to which reference should be made.

7. If the articles are boiled in a strong solution of nitrate of copper a bronze-like appearance is produced.

8. The articles can also be immersed in a strong solution of 2 oz. of nitrate of iron and 2 oz. of hyposulphite of soda to each pint of water. Washing, drying in an oven and brushing with a rotary brush complete the process.

9. One of the best means of producing a black surface on brass, pinchbeck or silver is platinum chloride which has already been briefly referred to, but, of course, the cost is rather heavy, but only a very little is needed. The salt is allowed to liquefy by exposure to the air

and it is rubbed on with the finger or by means of a rubber sponge ball of small dimensions, the object is polished with oil and leather. As mentioned before, platinum is dear but a little of it will do a vast amount of work.

Gas and Electric Fixtures

10. Ordinary gas and electric fittings and fixtures are pickled, but to give a good bronze-like effect there can be used either a solution of nitrate of silver or bichloride of platinum. The articles require blackleading after being thus bronzed, and they should be warmed in an oven before being dipped into the solution.

11. A solution of nitro-muriate of platinum will blacken brass quicker than anything else, but possibly 2 oz. of corrosive sublimate dissolved in 1 quart of vinegar acts as quickly, as is needed for most commercial work. This solution is brushed over the brass and allowed to remain until the latter is black. It is then wiped off and the brass cleaned and either blackleaded or else lacquered—usually the latter. It is then baked as usual.

12. A very good black varnish for brass is made by mixing a small quantity of pure lamp black with rather thick brass lacquer, using as little lampblack as is possible for the work in hand. Another varnish may be made by heating up and fusing 3 lb. of asphaltum and when melted adding ½ lb. shellac and 1 gal. of oil of turpentine. The melting can be done in an ordinary cauldron furnace, but if much of it is done a safety device in case of fire should be attached. This can consist of an overflow curb or else a rolling lid and overflow drain with fusible links or a combination of all three.

13. If merely wanting to black the brass goods they usually brush on a mixture of best vegetable black and French polish. This gives a nice dead black; however, the deadness can be modified by the addition of polish or lacquering with baking.

14. Another method is to make a strong solution of nitrate of copper in one dish and of nitrate of silver in another; the two are then mixed together and the brass is plunged into the mixture. It is then removed and the brass is heated evenly until the required degree of dead blackness is obtained.

15. The next way is to finely powder a small quantity of sal ammoniac and moisten it with water. The articles to be colored are heated in an oven or in any other convenient manner and then rubbed over with the mixture; they are then dried in a sawdust dryer with bran and whiting and polished in the usual way.

16. For making brass goods particularly brilliant the following is a standard method: They wash the brass work with roach alum dissolved by boiling in strong lye in the proportion of 1 oz. of the alum to 1 pint of lye, and when dry rub with fine tripolite. This and the last method will give to brass the appearance and brillancy of gold.

Colors for Polished Brass.

Some time ago there appeared in the *Zeitschrift fur der Chemie Industrie* an article by E. Ebermeyer on formulæ for a number of baths, designed to give brass objects various colors. The brass objects are put into boiling solutions composed of different salts and the intensity of the shade obtained is dependent upon the duration of the immersion. These formulæ being used now to some extent and being of interest to gas men, will be given at this time:

1. With a solution composed of sulphate of copper, 120 gr.; water, 1 quart; hydrochlorate of ammonia, 30 gr., greenish shades are produced.

2. With the following solution all shades of brown from orange brown to cinnamon are obtained: Chlorate of potash, 150 gr.; sulphate of copper, 150 gr.; water, 1 quart.

3. The following solution gives the brass first a rosy tint and then colors it violet and blue: Sulphate of copper, 435 gr.; hyposulphite of soda, 300 gr.; cream of tartar, 150 gr.; water, 1 pint.

4. Upon adding to the last solution ammoniacal sulphate of iron, 300 gr.; hyposulphite of soda, 300 gr.; there are obtained, according to the duration of the immersion, yellowish, orange, rosy, then bluish shades. Upon polarizing the ebullition, the blue tint gives way to yellow and finally to a pretty gray. Silver under the same circumstances becomes beautifully colored.

The effect of boiling or not boiling in this last creates quite a change therefore.

5. After a long boiling in the following solution we obtain a yellow brown shade and then a remarkable fire red: Chlorate of potash, 75 gr.; carbonate of nickel, 30 gr.; salt of nickel, 75 gr.; water, 10 oz.

6. The following gives a beautiful dark brown color: Chlorate of potash, 75 gr.; salt of nickel, 150 gr.; water, 10 oz.

7. The following gives in the first place a red which passes to blue then to pale lilac and finally to white: Orpiment, 75 gr.; crystallized sal soda, 150 gr.; water, 10 oz.

8. The following gives a yellow brown: Salt of nickel, 75 gr.; sulphate of copper, 75 gr.; chlorate of potash, 75 gr.; water, 10 oz.

9. On mixing the following solutions, sulphur separates and the brass becomes covered with iridescent crystallizations: (a) Cream of tartar, 75 gr.; sulphate of copper, 75 gr.; water, 10 oz.; (b) hyposulphite of soda, 225 gr.; water, 5 oz.

10. Upon leaving the brass objects immersed in the following mixture, contained in corked vessels, they at length acquire a very beautiful blue color: Hepar of sulphur, 15 gr.; ammonia, 75 gr.; water, 4 oz.

Covering Brass with Luster Colors

For coloring brass with a very beautiful luster color, there is a process by which this much desired end may be easily attained. One ounce of cream of tartar is dissolved in 1 quart of water, which is then made hot in a small kettle, placed on an industrial stove. To this is added ½ oz. tin salt, which may generally be protochloride of tin dissolved in 4 oz. of cold water. The whole is then heated to 212 deg. Fahr., and made to boil. One clear solution is decanted from a trifling precipitate and poured gently under continual stirring into a solution of 3 oz. of hyposulphite of soda in ½ pint of water, whereupon it is again heated to the boiling point and filtered from the separated sulphur. This solution produces on brass the various luster colors, depending on the length of time which the articles are allowed to remain in it. The colors at first will be light to dark gold yellow, passing through all the tints of red to an iridescent brown. A similar series of colors is produced by sulphate of copper and lead, which,

however, are not remarkable for their stability; whether this defect will be obviated by the use of the tin solution is a matter which the writer can express no opinion.

Dips for Brass.

A good "dip" for cast brass is sulphuric acid, 1 quart; nitric acid, 1 quart, and water, 1 quart. Gold lacquer for undipped brass is alcohol, 4 gal.; turmeric, 3 lb.; gamboge, 3 oz.; sandarac, 1 pint. Green bronze dip is wine vinegar, 2 quarts; verditer green, 2 oz.; sal ammoniac, 1 oz.; salt, 2 oz.; alum, ½ oz.; French berries, 8 oz. These are put in a kettle over an industrial stove and boiled together when the mixture is ready for use.

"Curling" is a particularly fine finish for high-grade scientific and optical brass work. All scratches have to be removed and a high polish given by the use of files, emery paper, Ayr stone and at last fine "rotten stone." It is kept wet with water and the "curling" is produced with the aid of a pointed stick of charcoal. The motion, of course, has to be circular. When finished, the finest lacquer is applied and the goods are baked in a gas-fired lacquering oven.

Dipping and Pickling Brass

It is preferable to employ at first a weak solution containing salts of copper and zinc from previous operations and termed pickle in carrying this class of work. This slowly removes the surface coating and leaves the metal smooth. Dilute sulphuric acid is also used as a pickle for sheet copper, being slower and more uniform in its action in proportion to the degree of dilution. Nitric acid, which is the chief constituent of aqua fortis, exerts a more powerfully solvent action on zinc than on copper, so that the surface of dipped brass assumes a warmer tone, shading more or less into a reddish yellow. To some extent the color may be varied by using aqua fortis of different strengths either cold or warm, probably depending on the component metals being dissolved in different ratios by acids of varying densities. Nitric acid containing a certain quantity of nitrous acid is capable of producing different shades of color.

To obtain such a mixture, small quantities of organic substances are used for the purpose of generating nitrous fumes by the action of concentrated nitric acid upon them. Thus sawdust added to strong nitric acid imparts an orange color, due to the partial decomposition of the acid and the formation of nitrous acid.* Dead dipping is the name applied to the process of producing a dead yellow surface on brass work by dipping in suitable liquids. The work is first pickled in dilute or spent acid until the scale can be removed by rubbing. It is then well washed and placed in stronger acid, which acts much more promptly, giving rise to a frothy appearance. This is removed by rinsing the work in water, after which it is dipped in strong nitric acid for a few seconds, washed in water containing dissolved argol, finally being dried in hot sawdust by means of a gas-fired sawdust dryer (usually water jacketed for safety, although by no means always so), as has been already shown and illustrated.

The argol solution is said to prevent a brownish discoloration or mottling of the surface which would otherwise occur. In this last dipping it is important that each article should be dipped separately and not a number strung together on wire as is often the case in the former dippings.

*Nitric acid = HNO_3; whereas nitrous acid = HNO_2.

Gold Dippings for Brass

One of the most common dips for producing a gold effect on brass is to soak firstly in the following before the main dipping bath: Caustic potash dissolved in 10 times its weight of water. This is warmed only a little as the solution of the caustic potash itself gives quite some heat.

In the second part of the operation a gold bath is composed as follows: Distilled water, 17 pints; pyrophosphate of soda, 28 oz.; hydrocyanic acid of ⅓ prussic acid, 1/3 oz.; crystallized perchloride of gold, 2/3 oz. The pyrophosphate is dissolved in 16 pints of water, heated by gas, filtered and then cooled. The filtered solution of the gold chloride is added and then the hydrocyanic acid when the whole is set in a cauldron furnace with a enameled kettle and raised slowly to nearly 212 deg. Fahr. for use, a temperature in fact of 210 deg. Fahr., or just below the boiling point is best. Before entering the bath the articles should be passed through a solution of water, 2½ gal.; nitrate of binoxide of mercury, 1/3 oz., and sulphuric acid, 2/3 oz.

The Dulling of Brass

The dulling of brass is in many cases just as much practised as the brightening of brass in others. The process is exceptionally simple and is carried out as follows: They take 1 part by weight of iron rust, 1 part of white arsenic and 12 parts of hydrochloric acid and mix them together, employing a gentle heat only. The brass is then cleaned thoroughly and this material is applied with a brush until the color and finish desired is obtained. Then they oil well, dry and lacquer.

Brass Finishing by Mottling

In carrying out this process the brass is first polished to the required degree and if it is a fine surface, the mottled appearance is imparted by rubbing over it with a gyratory motion a Scotch gray stone moistened with water. If the work is not very fine a piece of fine emery paper is then used in the same manner. If it is coarse, a dead smooth file may be used. Another method, however, is to secure the emery cloth or paper to the end of a small round stick, placing the stick in the universal chuck of a lathe, holding the work against it with a light pressure and moving it along while the lathe revolves. It is then cleaned, lacquered and baked in a gas lacquering oven in the usual way.

General Brass Finishing

If the work to be finished is greasy, it is usually cleaned by heating and dipping in acidulated water—vinegar and water or washing soda and water—and then in clear water, for which purpose a cauldron or tank furnace is ideal. The finishing bath may be either nitric acid, 2 parts; water, 1 part; or 1 part of sal ammoniac, 1 part of sulphuric acid, 1 part nitric acid and 1 part water—all by measure. The sal ammoniac is dissolved in water until a saturated solution is obtained.

The articles should not be allowed to remain in the acid more than 10 seconds. They are then taken out, plunged in clear cold water, thence into hot soapy water and then dried in hot sawdust as already referred to.

Frosting Brasswork

Frosted brasswork is familiar to every gas man. The process is not only simple but it is so commonly employed now that every gas man should note the operation and so sell the equipment for doing it, because the writer has seen plenty of old junk being used for the purpose in otherwise well equipped shops where the gas man should have known better. Here is the operation:

If old work, it has to be washed by being boiled in potash to remove the lacquer. A tank furnace with a welded steel tank of about No. 10 gauge is best for the purpose. The tank wants to be plain—no use having it galvanized—and never use a rectangular tank of cast iron for such work; although it's all right to use a round cast iron kettle (the reason will be obvious). Now they pickle it in water, to which a little nitrous acid has been added. It is now dipped in strong nitrous acid. It is now washed quickly in another tank furnace filled with hot water and dried in a gas-fired sawdust dryer. The bright parts are burnished with a burnisher.

To Finish: The work is heated in an oven or in some other convenient way until it is as hot as can be held—say from 110 to 150 deg. Fahr., or even more sometimes and then lacquered. This lacquering has to be done as quickly as possible or it will tarnish.

Olive Green on Brass

The production of olive green on brass is quite a simple operation, it is merely done as follows: They take copper sulphate, 8 parts; sal ammoniac, 2 parts, and water, 100 parts. This is boiled in an enameled kettle and the articles are left suspended in it till the proper color is reached.

Patina Color on Brass

The beautiful color on brass called patina was originally produced by articles being exposed to the action of the atmosphere. The green color is largely imitated by any of the following methods:

1. Copper carbonate is triturated with sandarac varnish. This affords the cheapest and poorest imitation.

2. The second method is done as follows: They take 1 part of copper and dissolve it in 2 parts nitric acid, 15 parts vinegar and ½ part of ammonium chloride* may be added. The articles for which brass should be used should be allowed to stand for several days, and afterward wiped with linseed oil which is gummy.

3. In the third method they use a solution of cupric nitrate in which 10 per cent of salt has been added, and when the article is thoroughly dry they apply a solution of 20 oz. vinegar, 1 oz. of ammonium chloride and 2 drams of oxalic acid. This is repeated, if necessary. In the course of a few days the article will be finely colored.

*Ammonium chloride, NH_4Cl is identical with sal ammoniac.

Protecting the Brass from Tarnish

To keep brass from tarnishing, after thoroughly cleaning and removing the last traces of grease by the use of a hot solution of potash and water, the brass work has to be thoroughly and carefully rinsed with water and then dried, but in so drying care must be taken not to handle any portion with the bare hand nor anything that is greasy. For this reason wires are generally used and the goods carried by them from tank to tank in cleaning, and thence to the sawdust dryer or other drying equipment. The preservation varnish may be shellac, much diluted with alcohol or it may be hard oil finish. In either case the brass should be made pretty warm, either by regular or preferably by a conveyor oven when the shellac is put on with a brush as thin a coat as possible. The proportion of shellac to alcohol is about 2 oz. of the former to 9 oz. of the latter. Sometimes gamboge is used for a coloring matter to make the varnish more yellow and sometimes they also use dragon's blood either in combination or separately and as a substitute for the gamboge.

Production of a Silver Coating on Brass.

The way they go about producing a silver coating on brass is not at all uninteresting and may be briefly described as follows: They take cream of tartar, 23 parts; tartar emetic, 2 parts, and dissolve them in a kettle having 500 parts of water which is made hot. They then add to this hydrochloric acid, 25 parts; powdered or fine granulated tin, 62½ parts, and powdered autimony, 15 parts. This is then heated to the boiling point and then the articles to be coated are dipped in. The whole thing is then boiled for half an hour, and the brass will be found to have a hard durable silver like white coating.

The whitening of brass is somewhat akin to the process just described. In 2 gallons of water they dissolve 3 lb. of cream of tartar and 4 lb. of finely divided tin. This bath is heated and used as the other. The bath has the advantage that it can be also used for copper.

Violet Color on Brass

The production of a violet color on brass is different in the mode of preparation to most others. It is done as follows: They take 1 lb. 2 oz. of hyposulphite of soda and dissolve this in 1 gal. of cold water. In another gallon of warm water they dissolve 6 oz. of lead acetate (crystallized). The two solutions are then mixed together and heated up to about 170 or 180 deg. Fahr. Then they clean the articles in another bath of hot lye, wash in water and put them in this hot bath at the temperature of 170 or 180 deg. Fahr. just referred to. They are left in the hot bath until the proper color is reached.

In conclusion it would be of interest to say a word or two on such matters as polishing brass monuments and other articles. They use Spanish whiting mixed with warm distilled water at about 180 deg. Fahr. for this purpose in the proportion of 2 lb. to the gallon. This is stirred and then allowed to settle until the gritty parts have subsided. Then the top water is decanted into another vessel and allowed to stand. The settlings in the second vessel are then mixed with jeweler's rouge and used for polishing. This is a simple process, but

it is surprising the number of small factories making these kinds of products.

ROUGHENING SHEET BRASS FOR PAINTING WITH OIL PAINT

In this operation they make a pickle of cold concentrated hydrochloric acid, 1½ parts; concentrated sulphuric acid, 12 parts, and water, 12 parts. The brass is then placed in this pickle and allowed to remain there for almost 12 hours. This gives the brass a sort of moire-like appearance. It is then removed and put in a tank heated by gas having water. If it is desired to hasten the process they often use a mixture of bichromate of potassium and hydrochloric acid or else use an electric process which hardly concerns us here.

Gas Multiplies Bread Wrapping Operation Ten Times

How many times have we looked at a carefully wrapped package invisibly sealed and wondered how the thing was done? The loaf of bread—for example—that comes to our door fresh from the bakery in a shiny waxed coat, air-tight and dust-proof, untied—to all appearances molded in that glossy paper exterior? Who put the paper on? How was it sealed? How does it happen that all the breads are sealed exactly the same ways? Does it take long?

These are only a few of the questions that suggest themselves when that loaf of bread bids us a "fresh" good morning, according to *Gas Logic* for September. The whole thing looks simple, but little do we suspect that the loaf came hot from the works of a powerful machine that wrapped it up in one second—ten times faster than the speediest girl could possibly do the same job. No less remarkable is this mechanical wizard than the humming press that flaps out the morning newspaper.

Uptown in the Harlem district, one of New York's largest bakeries turns out 60 loaves of bread, weighing one and one-half pounds each, every minute, or 3,600 loaves in an hour. These loaves are wrapped in germ-proof waxed paper, sealed at both ends, and can be uncovered only by tearing the paper.

This wrapping and sealing the bread is the work of a new gas machine. Before its invention a small hand device was used, whose capacity, if worked at top speed, was limited to six loaves of bread a minute, or one-tenth that of our modern gas machine. The hand device required the labor of girls to wrap the loaves before they were fed to it to be sealed; the gas invention calls for one man to feed the bread and another to pack it as it comes out, wrapped—one every second—ready to be shipped to market.

One look at the gas machine and the mystery of the sealed bread is solved. The operation of wrapping and sealing is performed by an automatic feeder which carries the bread down a slide over a roll of waxed paper fastened under the machine, a hot plate which seals the ends of the loaf by melting the wax from the paper, and a reverse moving belt which cools the heated ends as the loaf passes on down the chute. The man who feeds the bread first lights the gas under the hot plate and then sets his machine in action. He passes the loaves down the slide, from which they are conveyed, automatically, over the wax paper. As the bread passes up and over the paper roll, the correctly measured piece of the latter required for wrapping is cut off by saw teeth, and by mechanical fingers is folded around the loaf. As the bread slides over the hot plate along the moving belt, the heat from the gas seals the folded ends, causing the wax from the paper to melt sufficiently for the ends to adhere. Incidentally, the wax paper used for the wrapping is waxed before it reaches the bakery by a process involving the use of gas. After the breads have been sealed they slide over a reverse moving belt which cools the waxed ends and drops the loaves into the hands of the man waiting to receive them.

One of the primary causes to which the success of the gas bread-wrapping machine is attributed is its ability to be adjusted to any size loaf of bread, large or small, narrow or wide. The wrapped food article has found much favor with women who are attracted to it for hygienic as well as aesthetic reasons. Like boxed cereals, tinned crackers, or bagged flour, the wrapped loaf of bread has sealed its way into the modern kitchen.

Long Time Service Records of Employees

The long time service record for employees of the Peoples Gas Light & Coke Company of Chicago, Ill., just compiled, shows that 16 ment have been in the employ of the company for 35 to 40 years. Fifty men have remained at their posts for a period of 30 to 35 years; 48 for 27 to 29 years; a similar number for 25 years, and 60 from 22 to 24 years. The group who have been "in the service" for 20 years numbers 65; and 47 men have served 19 years. All the way down to a 15-year period the number of "veterans" remains high. Officials of the company emphasize the particular importance of long service in a public utility, because of the peculiar demands for faithfulness and expert work. The enormous quantity of work involved in building up and maintaining a utility necessitates specialization and intimate knowledge of particular technical fields, they point out. Because of these considerations, they look upon the long lists of seasoned employees with great pride.

Chief Clerk and His Subordinates Supreme in Control of Good-will

J. K. Swanson Tells How to Improve Attitude of Consumers Toward Gas Company

Without any exception, no individuals in the service of your company so completely control the destiny of good-will as do the chief clerk and those under his supervision, declared J. K. Swanson in a paper presented at the recent annual convention of the Michigan Gas Association. All attempts made by the manager to ameliorate existing conditions which thwart the requirements of perfect service, can be speedily undone by the discourtesy of the local office force. The opportunity of personally meeting more than half the population of the entire community once every thirty days places a tremendous responsibility upon the chief clerk and his associate clerks with respect to the kind of service rendered. Discount period is a period of personal contact. Name any other business in your city or any other city that compels their customers to come to their place of business with the same precise regularity as we do. Consequently, results of far-reaching magnitude must be the logical outcome of this personal transaction. By

this repeated contact one of two opinions is unquestionably formed—either we are, or are not, courteous. Incidentally, an opinion is formed regardless of our wishes, but the results are entirely in keeping with our assumed attitude. We have in this transaction, made or lost a friend.

It almost goes without saying that errors may be made in computing our bills, faulty practice may have grown up in our meter reading system, but all these operating difficulties, annoying as they may be, can be forgiven or overlooked by the public if we just practise whole-souled courtesy.

Consider for the sake of concrete illustration the application of courtesy as affecting the so-called order desk department, and the general instructions which should guide the clerk in charge of this department.

In the first place, there are two ways by which this clerk comes in contact with our customers, viz.:

(a) By telephone conversation.

(b) By personal contact.

Telephone Conversation

In the case of contact with our customers over the 'phone, an unusual amount of care should be exercised, so that you do not appear to be discourteous, argumentative, or in a hurry. Remember that the telephone robs you of the good offices rendered by your personality and, consequently, you have to rely upon the tone and pitch of your voice, together with a general spirit which should evidence your desire to convince or assure our customer of your interest in his respective requirements. Furthermore, always bear in mind that the public are just as busy as you are and that they are not going to the trouble of looking up our company number in a directory just to 'phone us for the mere pastime. The moment the 'phone rings it spells with no degree of uncertainty "Opportunity for Service." When one of our customers comes into our office to requisition service, and waits the pleasure of dilatory clerks, at once he begins to compare the treatment given him in contrast with the prompt and efficient service of private business. Consequently, the many great things which should naturally come from community ownership and control of public necessities are at once discredited, and you are the direct cause. To forget this is to do the company's interests irreparable damage and undo much that has been accomplished by other departments and individuals through years of previous endeavor.

Personal Contact

Nobody ever amounted to very much who was so situated that he was entirely bereft of the privilege of coming in contact with people. Our whole social fabric is built upon the direct results of social order of things. Even the animal kingdom reflects this law. To correctly understand the principles that make people enjoy meeting you and have confidence in what you say, is to understand one of the fundamental assets in your life. Our company fully realized all this when they chose you to meet our customers at the order desk. This is the place of personal contact. A general neatness of appearance, smile on your face, coupled with self-evident desire to become accommodating, places our new customer at perfect ease, and compels him to be sociable. From this point of contact you have established a friendly basis to begin the discussion of business. He feels immediately that he has come to requisition our company for a class of service which we are desirous and anxious to sell; and just as anxious to deliver the same in an accommodating manner. Questions will come up that are perhaps a little difficult to answer in connection with some business transactions. These difficult points should always be taken up with the chief clerk and ironed out. Never get around answering any problem at the order desk by saying: "It's the company's rules." In a sense, you are the company, and with this idea in mind, avoid religiously any reference to rules, regulations and requirements. It is never necessary to so direct your conversation as to emphasize instructions.

Train Him First.

Now that you have outlined the policy of the company to the order desk department, take the pains to see to it that each department head is given similar instructions. One of the most conspicuous sins of public utility operators is the practice of hiring the services of clerks and then turning them loose on their new work, forgetting their gross limitations, and expecting them to be already well oiled up mechanical contrivances. Nine times out of ten the human equation is forgotten.

At this point it is well for us to consider further the negative mental attitude of our consumer, in order that your clerks will more clearly understand what obstacles must be overcome. He is likely to be somewhat prejudiced against us, for some of the following reasons:

First.—We insist that he pay his gas bill on or before a certain date, otherwise there will be a discount penalty; while the grocer and the butcher have a more elastic rule.

Second.—His bill seems to him excessive, and with positive proof in his mind that this month's bill ought to be 10 per cent to 20 per cent less than last, he is sure our charge is exorbitant.

Third.—He cannot see "why we are justified in making a minimum charge."

Fourth.—He cannot understand why the meter reader failed to read the meter when "there was someone in the house every day last month."

Many more reasons like the above might be cited, which give him a basis to become impatient with our methods simply because the customer does not understand our methods.

Without going into unnecessary detail, with regard to how to adjust each one of these complaints, bear in mind that, because the evidence is so abundantly on our side of the case, it does not necessarily appear in the same light to our consumer.

The task now is to go over the ground so carefully that, in place of assuming an air of authority, we will be courteous. The individual efficiency of any office depends upon the courtesy of each individual clerk. Courtesy is the duty public service owes to the humblest member of the public. Without it, any organization, however unlimited in its scope of usefulness, will ultimately become unsuccessful. Every possible effort should be made by those whose duty it is to serve the public, to make an atmosphere of good-will pervade every transaction, however minor that transaction may be.

Using Cement to Make the Joint

TOOLS USED IN MAKING CEMENT JOINTS
FIRST YARN, NOTE BELLOWS USED FOR BLOWING DIRT OUT OF BELL
YARNING
FILLING BELL WITH CEMENT
SECOND YARN
DRIVING UP SECOND YARN
PLACING FINAL CEMENT
POINTING UP JOINT
12" CEMENT JOINT LINE, NOTE EARTH COVERING ONE PIPE.
FINISHING ONE JOINT, YARNING NEXT JOINT

IN A PERIOD OF HIGH COSTS THE CEMENT JOINT SUGGESTS AT LEAST ONE MEASURE OF RELIEF. IT IS AS LEAK-PROOF AS LEAD JOINT IF PROPERLY MADE.

ILLUSTRATIONS SHOW SUCCESSIVE STEPS ADOPTED BY PACIFIC COAST GAS ASSOCIATION TO ACHIEVE THIS RESULT.

A Good Joint Is Tight and Free from Leakage; Inexpensive and Easy to Make Up—Cement Joint Fills the Bill

W. M. Henderson Tells How to Make the Joint for Best Results —Uses Mixture of Cement and Sand for Mortar; Not Neat Cement

The essential feature of a good joint is first, that it be tight and free from leakage. Next, that it be inexpensive and easy to make up. Cement fills these requirements, according to W. M. Henderson, in a paper presented at the recent annual convention of the Pacific Coast Gas Association.

Where Inflexibility Is an Asset

The only criticism we have encountered in this practice can just as readily be used as a testimonial in its favor. It has been charged that cement makes a far too rigid joint. In all ordinary installations of cast iron pipe this characteristic of the joint need give no concern. Where the pipe is likely to be subject to shock or vibrations, caused by traffic or made ground, the rigid joint may be looked upon as an asset. It is a question whether it would not be better to have a rigid system which would be subject to a break and thus easily detected, rather than innumerable small leaks due to the flexibility of lead joints and difficult to detect under the modern pavements which now cover our cities. It is not for me to criticise lead, its usefulness is too well appreciated. Yet it is best by comparison to actually show the merits of any product particularly so in this case when all of us are so familiar with the use of lead.

Neat Cement Not the Proper Use.

The practice which is more or less general of using neat cement for packing the joint is not proper and will not give the satisfaction obtained from a mixture of Portland cement and sand. The best evidence of this is found in the characteristics of the material. Neat Portland cement in setting, rises in temperature over a range of 60 deg. Fahr. to 150 deg. Fahr. in 12 hours, while a mixture of one part Portland cement and one part sand only rises in temperature during setting from 60 deg. Fahr. to possibly 70 deg. Fahr., or not in excess of 10 deg. Fahr. in 12 hours. This is ample reason for selecting a mixture, for it is natural to expect considerable expansion to accompany the increase in temperature during setting of neat cement, which will likewise be followed by contraction. This fact accounts for the shrinkage cracks that have developed in joints made with neat cement.

Neat cement has a greater tensile strength than cement mixed with sand. But the strength of the latter when mixed one to one, is strong enough for any joint.

Yarn an Important Factor.

Selection of material is of importance if success is to be attained. Quick setting cement is preferable, but cements in the local market give little choice in this respect. Good clean sand not too fine and not necessarily sharp, will make a strong mortar. The yarn is an important factor, the old hemp rope, the standing rigging from sailing vessels cannot be excelled. It is

SIZE OF PIPE		LEAD JOINTS				CEMENT JOINTS				
		LEAD PER JOINT	YARN PER JOINT	TIME PER JOINT	TOTAL COST	CEMENT PER JOINT	YARN PER JOINT	SAND PER JOINT	TIME PER JOINT	TOTAL COST
4"	QUANITY	10-lbs.	.33-lbs	12 MIN.	.95	3-lbs.	.25-lbs	2.00-lbs	15 MIN.	.25
	COST	.77	.042	.1375		.018	.032	.025	.1718	
6"	QUANITY	12-lbs.	.50-lbs.	12 MIN.	1.12	5-lbs.	.33-lbs.	3.33-lbs	15 MIN.	.30
	COST	.924	.063	.1375		.045	.042	.042	.1718	
8"	QUANITY	18-lbs.	.55-lbs.	15 MIN.	1.63	6-lbs.	.50-lbs.	4.00-lbs.	20 MIN.	.40
	COST	1.386	.07	.1718		.054	.063	.05	.2291	
10"	QUANITY	20-lbs.	.80-lbs.	20 MIN.	1.87	8-lbs.	.66-lbs.	5.33-lbs.	24 MIN.	.50
	COST	1.54	.102	.2291		.072	.084	.067	.275	
12"	QUANITY	24-lbs.	.80-lbs.	24 MIN.	2.23	10-lbs.	.75-lbs.	6.66-lbs.	30-MIN	.61
	COST	1.848	.102	.275		.09	.095	.083	.3437	
16"	QUANITY	32-lbs.	1.20-lbs.	30 MIN.	3.30	12-lbs.	1.00-lbs	8.00-lbs.	30-MIN.	1.02
	COST	2.464	.152	.6875		.108	.127	.10	.6875	
20"	QUANITY	42-lbs.	1.66-lbs.	30 MIN.	4.13	15-lbs.	1.25-lbs.	10.00-lbs.	40 MIN.	1.34
	COST	3.234	.21	.6875		.135	.159	.125	.9166	
24"	QUANITY	50-lbs.	2.00-lbs.	40 MIN.	5.02	23-lbs.	1.75-lbs.	15.33-lbs.	60 MIN.	2.00
	COST	3.85	.254	.9166		.207	.222	.192	1.375	
30"	QUANITY	70-lbs.	2.75	60 MIN.	7.11	30-lbs.	2.00-lbs.	20.00-lbs.	1hr 20 MIN	2.61
	COST	5.39	.349	1.375		.27	.254	.25	1.8332	

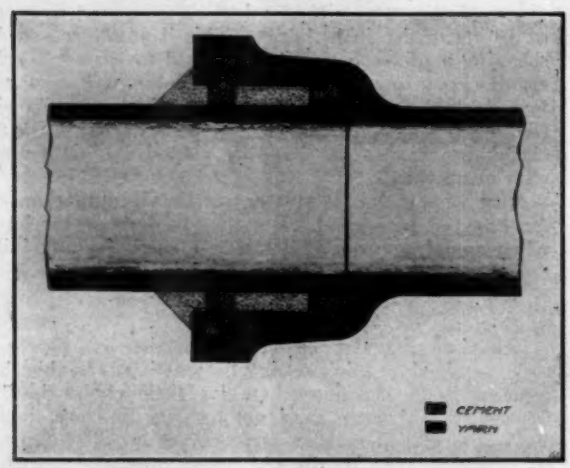
CALKER - 5.50 PER DAY, - 2 CALKERS ON 16", - 20", - 24", AND 30".
LEAD @.....077 A POUND
YARN @.....127 A "
CEMENT @.....009 A "
SAND (SPECIAL) @....0125 A "

COST COMPARISON OF LEAD AND CEMENT JOINTS.

more convenient and easy to use jute packing or other yarns but it is worth the effort to secure the abandoned rigging of ships.

The best mixture for the joint is three parts cement to one part sand and just sufficient water to make a dough that will hold its shape. The quantity of cement, sand and water should be mixed as necessary, for each joint as it is made.

In laying pipe for cement joints the procedure is very much as with lead with a few additional precautions. The pipe must be in its permanent resting place well blocked and tamped. As much as possible of its surface should be covered with earth so as to protect it from change of atmospheric temperatures. Avoid stepping on the pipe when getting in and out of the ditch; this should be a hard and fast rule particularly after cement joints have been made up and are green. Joints are best made in the afternoon, permitted to set through the night and tested the first thing in the morning. If found tight, backfilling should be done at once to protect pipe from the heat of day. Joints left exposed during the day must be shielded from the sun's rays, it is well to cover them with a wet sack as additional protection.



A CROSS SECTION OF THE JOINT—THIS ILLUSTRATION SHOWS THE RELATIVE PLACING OF THE YARN AND THE CEMENT IN THE JOINT.

Making the Joint

In making the joint the bell is first cleaned of all dirt by use of the hand bellows. Then a strip of hemp yarn is placed in the bell and driven home; this should be made gas tight. The balance of the bell is then filled with the mixture of cement grout; this is usually placed in the joint with the fingers and rammed in by a yarning iron or a wooden tool of similar shape. The cement is packed until it properly fills the bell, then another strip of yarn, coated with mortar, is set in the bottom of the bell and forced into the lead ring of the bell. It is then driven to place by working up each side of the joint. The cement mixture is forced out at the top, caught, and saved for pointing up the joint. When the second yarn is in place it sets just back of the lead ring. The balance of the space to the face of the bell is filled with either neat cement or the same mixture and the entire joint pointed at an angle of 45 degrees.

With the constant rise in material costs cement has done its bit to keep down the cost of new extensions. The table attached gives a fair comparison of the material and labor necessary on lead and cement joints. It is the result of actual experience and observation over a period of two years. During this time we have had occasion to lay pipe of all sizes excepting the 30 in. cast iron with both lead or cement.

To Give Employees Direct and Material Interest in the Utilities Apparently the Aim of the Companies

The New York Times' *Annalist*, Aug. 25, in an article describes the growth of customer and employee ownership among public utility companies, including the subsidiaries of the Standard Gas and Electric Company. The *Annalist* finds that:

"In these difficult days of sharp economic conflicts the corporation is beginning to consider itself fortunate, indeed, which maintains at the same time the good-will and co-operation of its employees, of the public it serves and of its security owners. In New York City a street railway strike recently disclosed bitterness of workers toward the management, antipathy of the travelling public against both the traction employees and the company, and marked discouragement of stock and bond owners over the whole situation which had resulted in a stoppage of operations. Frequently—it might be said usually—the citizens take sides with either the men or the management when a public utility concern experiences labor troubles. Their sympathies are aroused or they are moved by factors affecting their convenience in travel, and that they have a great deal of weight in the effectiveness of a strike is proved by the efforts always put forth by the contending parties to gain their support.

"All of which leads up to the statement that an important movement is gaining force in several separate and distinct localities of the country to eliminate the three-sided controversy when capital, representing public utility companies, and labor fail to hit it off. Further, the practically new development has as an equally important and correlated purpose the raising of money for plant extension and betterments in the regions where the corporations produce and sell their electric power, gas for fuel and light for their service in the form of street transportation. The utility companies are seeking to give employees so direct and material an interest in the properties for which they work that they will not act hastily over differences with the employees. The companies are making efforts to cement the interest of the people to company interests in such a way that suggestions for rate increases will receive at least a fair hearing, with chances more than ever that propoasls will be allowed through public acceptance when justification on economic grounds can be made."

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As the Journal Views It

Buried Treasure

Our contemporary, the *Gas Age*, is to be congratulated upon the facility with which it obtains original articles. As a general rule, we have to buy ours.

On page 270 of the Sept. 15 issue of our contemporary, one "John Weedon" apparently takes pen in hand to tell the world a few things about advertising gas service.

And strange as it may seem, the things this author has to tell have a very familiar ring.

"If it's been told," we reflect with customary modesty, "the JOURNAL told it."

We thumb over back issues—oh, many months back!

We find it—page 302 of the April 5 issue of the AMERICAN GAS ENGINEERING JOURNAL.

But this is not complete. Mr. Weedon gave utterance to the views expressed in the course of the discussion at the last annual convention of the Illinois Gas Association. The JOURNAL printed only what it deemed the "meat" of his dissertation. For the full account one must look to the proceedings of the Illinois Gas Association for 1919.

But surely our contemporary would not be guilty of publishing the article with all the earmarks of its being an original contribution if it were not such. This would be cheating the Illinois Gas Association out of credit that rightfully belongs to it.

It might also be styled stealing a certain amount of prestige as against competing publications which are more conscientious about giving credit where credit is due.

But in sparing our contemporary embarrassment, looking upon its action in the most charitable light, we must not do an injustice to Mr. Weedon.

Was he, after all these months to consider the matter, so proud of his extemporaneous effort that he must needs give the world a second time the benefit of his ideas on this particular matter?

We are quite well acquainted with Mr. Weedon's methods, style and abilities. Like most advertising men he doubtless places high value in the effectiveness of repetition.

It is quite likely that he might give voice to the same thoughts a second time, but we were certain he would not do so in the same words. These instrumentalities of expression have a wide range. There are 2,757 pages of words and their definitions listed in one standard dictionary, and with a very small proportion of them at his command one might easily tell the same story several times over with very little similarity of wording. It is difficult to believe that so skilled a worker as Mr. Weedon was so hard pressed for vocabulary that he must express the same thoughts after several months interval in practically the same words he used on the first occasion.

Another reason we cannot believe that this is a second effort on Mr. Weedon's part is that the article is signed "John Weedon." The original utterance at the Illinois convention was delivered by one John F. Weedon, who is more or less generally known in the gas field as publicity man for the People's Gas Light and Coke Company of Chicago.

It must have been a lean week for our contemporary, but even at that he should have thought twice before he resurrected an utterance one might say of Mr. Weedon's impetuous youth and on the spur of the moment. Maybe if this young writer had known he was going to be blared forth in capital letters as an author in a real business paper, he might have wanted the privilege of rounding off has commas a little more ornately or of relieving the machine-gun brevity of his sentences with some flowing rhetoric more in keeping with the tastes of those who aspire to authorship.

Should We Stop Building

Material costs are high. Labor is high and wants to go higher. It is right that we should stop and ask if now is the time to build that which we can postpone.

No sane man can believe that anything will go materially lower for a year, perhaps several years, to come. Do we really gain anything, then, by waiting?

There is the prospective builder of a home. Old houses he cannot buy except at vastly and properly inflated prices. The owners who have carried them through lean years have a right to recoup at a time they can get anything they ask for.

He cannot build except perhaps at a cost almost double that for which he could have built five years ago.

He must, however, have a roof over his head.

He may, perhaps, rent—but at from twenty-five to a hundred per cent more than he could have rented for five years ago.

Does this man really lose, then, when he builds? Even if costs of building go down eventually to what they were five years ago, isn't it possible he may pay extra in rent as much or almost as much as he saves by not building now?

Gas companies theoretically should be given a return that leaves them a reasonable dividend after expenses, which now are inflated, are met. We know that, generally speaking, this is not the case, but it should be, and, for the sake of argument, we will assume that it is.

What is lost, then, if we build now? Our structure may cost fifty thousand dollars where normally—we still view the situation of five years ago as normal—it would cost twenty-five thousand dollars. But what difference does it make if we get our return on fifty thousand? The "nigger in the woodpile" lies in the fact that some day such a structure might again cost thirty-five thousand dollars. Regulatory commissions might expect the utility then to be content with a return on that amount. Some municipality might want to take it in at that amount.

Capital has a right to inquire and be reassured of the security of an investment. Government bodies should give it this assurance. The thing is to leave no obstacle in the way that holds that structure back.

Bolshevism is not feared generally in this country "because our people are generally educated and realize the consequences of anarchy." But how will this education avail if there is unemployment on top of desperately high cost of living? With the wolf at the door the "bust" has already come to the individual thus situated. What matters it, then, to him if the consequence of his running amuck will be a "bust" for everybody?

There must be intelligence enough in the land to guard against unemployment of any class of workers, and that is the direction we are apparently headed for in some cases.

Even if we must pay subsidy to prevent it, unemployment must not come. The subsidy may cut even into principal, but surely in time of stress a half a loaf is better than none.

Labor's demands for higher wage will continue as long as living costs are high. Close examination in the majority of cases may perhaps reveal that they are not altogether unjustified; that they are not always prompted by greed, but by grim necessity.

Stopping the wheels of industry will not solve the problem. It will merely condemn to starvation a considerable body of human beings who may not be content to starve passively.

The one way out is feverish activity. If the profit on one item of production is pared down by high wages and consequent high materials cost, increase the number of that item produced.

It isn't a pleasant situation at the best. But it exists and must be met with. Laying down will not solve it. It will merely nurture a vexation into a menace.

All must live, all have a right to live provided they are willing to exchange for their livelihood their industry.

Providing the work for them to do is the only safe pathway out of the difficult. Providing the funds to pay the extra cost lies only in greater production efficiency and volume.

Asleep at the Desk with the Day's Work a Quarter Undone

Without venturing too deeply into the realms of the unfamiliar, permit us to suggest that even at this day headwork is a unnatural form of human effort. We do not know really whether there is any scientific reasoning that will justify this assertion, but, we make it, with considered boldness, because experience has demonstrated that to us, at least, it has always been a more or less uncongenial undertaking.

We can spade up chicken runs with a certain degree of pleasure and have always delighted to match our powers, reinforced with a crowbar or lever of some form against apparently immovable objects. And, even though the satisfaction of achievement is not there, we never have begrudged the five miles or so we have pulled on oars to catch five or six small sunfish.

But when it comes to devoting a half hour's study to a proper use of the English language—my, how the soul revolts!

Working indoors, away from the bright sunshine and nature-created breezes, likewise is unnatural to man, at least except in nasty weather, and is more or less repugnant.

A considerable proportion of those who read this journal are indoor workers who labor with their heads.

Some few of them, we understand, sometimes experience a tendency towards the wane of the afternoon to doze at their desk. This tendency may be aggravated by too little sleep the night before, too heavy a luncheon or too close an atmosphere. But even with these influences absent, it sometimes exists just the same.

It is disagreeable and embarrassing. Likewise it represents decreased efficiency. And it can be eliminated. It's simply a matter of keeping one's vigor up.

This means some form of physical effort that will freshen up the blood and keep the physical man up. It should be made daily, but not necessarily lengthily. Dependent upon the system utilized, as little as fifteen minutes thus spent should suffice.

If there is no one else to advise as to a system, make friends with an ex-soldier. Get him to teach you the setting-up exercises they taught him in the army. Go through them daily, and do it with the fresh air blowing.

A Reminder to the Man Who Was in the Service

John D. Kuster Voices What All Are Aware of, the Seeming Forgetfulness and Indifference to the Sacrifices Made, and Points Out How Quickly All This Must Pass

To those members who were actively in the war service I want to say that we are proud of you, declared John D. Kuster, in his presidental address before the Pacific Coast Gas Association. It is all so recent, it may not mean much to you now; and you may think that people show little appreciation and forget quickly the sacrifices that you made, but the results of your accomplishments won't be forgotten and the world won't forget what the Americans did, and your children won't forget that "Daddy" was in that scrap, and you yourselves can't help but feel just a little pride and secret joy that you were in it.

The full story of the mobilization of this country's manhood and resources; its industries and food products can hardly be told. It started slowly, but gathered a momentum and volume in a few months that soon eased the sobs of despair in the hearts of the Allies, and threw the fear of God, the American God, the liberty-loving God of Washington into the enemy, and demonstrated to the Prussian War Lords that liberty and justice had its birth in America 150 years ago, and that Americans of this generation would see that this blessed heritage should not perish.

The public utilities and the big industries of this nation are largely responsible for the early victory, and in the two years just past have by their wonderful performance answered all the criticisms of the enemies of "big business" and justified their existence. May all these critics in future be reminded that the owners and employees alike enlisted for duty overseas or at home, and gave freely and without limit of men, money and production, without which the Allies, this nation, these industries, and the thoughtless critics would have perished together.

In this death struggle the gas fraternity has had a noble part, many of its brave and brilliant young men gave all and made the supreme sacrifice. Gas engineers and chemists were in demand, and their training and education had equipped them for immediate and valuable service to the country, in the innovation in modern warfare instigated by the fiendish enemy in the use of poisonous gas.

When $750,000,000 Is Spent Annually in This Country for Advertising, When Even Banks Consider the Good-will Created by It in Granting Credit, Is It Necessary to Ask Will It Pay the Gas Company to Avail Itself of Its Possibilities?

G. Douglas Mantle Suggests a Plan for the Gas Company to Adopt in Launching into Advertising—Things Needful in the Advertisements That Bring Returns

It is estimated that $750,000,000 is expended annually on advertising in the United States, and of this sum by far the greater portion is spent by companies in the highest financial standing, whose appropriation increases year by year, and who will frankly admit that without this stimulus to their business they could scarcely exist, declared G. Douglas Mantle in a paper presented at the recent annual convention of the Pacific Coast Gas Association.

The principal banks of America, comprising the American Bankers' Association, were asked by *Printer's Ink* of 1914 if they would take into consideration in granting credit the good-will created by advertising. A majority of those who replied stated that due consideration for the good-will should be given in granting loans, and one bank, which is generally regarded as conservative, went so far as to say that "a certain proportion of the advertising expenditure should be shown on the books as investment, the portion to be determinted by a comparison of the results which had been obtained, with the reasonable expectation of results to come in the future."

In 1919, five years later, practically all of the banks addressed are themselves using advertising space freely.

With this example of the development of advertising in the necessarily most conservative profession, it becomes almost a platitude to say that advertising is an absolute necessity to modern business.

Essentials of Good Advertising.

Advertising is not a matter of filling a certain amount of contracted for newspaper space with words. It is as much a science as any branch of engineering, with definite rules for the application of definite psychological forces.

The successful advertising campaign must be planned far ahead, allowance must be made for every influencing factor, favorable or unfavorable, and through all the idea must remain uppermost that the campaign has but one object—to sell gas.

Close co-operation with the sales department is essential, and to ensure success the sales and advertising departments should work together as one unit, for it is just as possible for one department to completely nullify the work of the other by lack of harmony, as it is possible for both to more than double their efficiency by careful co-ordination of effort.

Advertising and personal salesmanship do not conflict in any way, on the contrary skillful advertising must be a great assistance to the salesman.

It may be said that there are four distinct phases in the accomplishment of any sale: (1) Obtaining the prospective customer's attention; (2) Creating the desire for the article that is for sale; (3) Making it clear that the article is easy to purchase; (4) Obtaining the signature to the order.

Salesman, but Better Paid Still Necessary.

No one who has had experience in the sale of gas can seriously dispute that the salesman is necessary in completing phases (3) and (4), that is, in answering inquiries created by the advertising and in closing sales. It has, however, been proved beyond the shadow of a doubt that phases (1) and (2), the attraction of the attention of the consumer and the creation of the desire to buy are more efficiently accomplished by intelligent and consistent advertising than by direct sales effort.

The salesman may make his twenty or thirty calls a day, but it is only by the rarest of luck that he calls upon the consumer at the psychological moment.

The newspaper, on the other hand, carries the message into the great majority of homes every day, and by intelligent presentation and constant reiteration drives the point home slowly but surely. At last one evening when "hubby" has settled down in his easy chair with his pipe, his wife perches on the arm and tells him of the troubles she has had in getting hot water for the kiddies' baths. She hands him the evening paper open at the gas company's attractive water heater advertisement, and hubby, mellow under the influence of a good and ample dinner, tells her to telephone the company in the morning.

Now, it was not until the wife started reading the series of advertisements that she realized that the hot water problem worried her at all, but after reading them every time

she lit the stove to get a little hot water, the "just turn the faucet" story recurred to her mind, and as succeeding advertisements drove home, one after another, the advantages of the gas water heater the desire was converted to a positive need. It would have needed many calls of a salesman to accomplish this work, even had he been able to fill the first essential of a sale by gaining the woman's attention.

The old time solicitor seems to be rapidly becoming extinct, but advertising makes possible the employment of a different type of salesman at higher remuneration because of the increased efficiency of his efforts.

The Tests of an Advertisement

A good advertisement must satisfactorily answer five questions: (1) Will it attract the attention of the consumer it is intended to reach? (2) Is it specific? (3) Is it forcible? (4) Is it plausible? (5) Is it sincere?

No piece of copy should be allowed to go to press which does not answer these questions. Every word that is extraneous to them should be eliminated.

In writing copy it should be borne in mind that the reader of a paper does not primarily desire to read the advertisements, and it is almost against his will that his attention must be attracted and held until the story is told. In preparing copy, therefore, the writer must put himself in the place of the prospective consumer and only present such matter as will be of definite interest and at the same time create the desire to possess.

Study of a skillfully composed advertisement will show that when the attention has once been attracted to the first line it is difficult to stop reading until the whole story has been absorbed. The subject is smoothly and logically developed from the first interest creating sentence to the final urging to immediate action.

An advertisement consisting of bald disjointed statements, or containing matter extraneous to the five essentials is not efficient. The attention of the reader will wander from the subject at the slightest excuse and cannot be regained.

If the appliance advertised has many points of appeal, the main part of each of a series of advertisements should be devoted to one of these points, with but the briefest summary of the rest. An advertisement containing too many appeals becomes confusing and has no retention value.

Advertising Must Be Consistent

The habits of consumers are not changed in a day, and just as it is the constant drop of water that wears away the stone, it is the consistent advertiser that produces results.

Advertising with the sole purpose of attracting the attention of consumers, and creating their desire for the appliance to be featured, should be run long before the commencement of any special sales campaign. When the campaign actually starts large spaces should be devoted to purely merchandising copy, that is, to convincing the consumer that the appliance is easy to buy and to securing his immediate order. To start advertising and campaign at the same time is to greatly reduce the efficiency of both efforts.

In this connection it is suggested to the smaller companies that they should use newspaper space consistently throughout the year, and reap the harvest of their advertising by means of periodical sales campaigns. By arranging these campaigns to follow one another in a number of adjacent towns, these companies might profitably follow the example of the California electrical fraternity in hiring one good salesman to work for several companies.

The Advertising Appropriation

Two factors decide the amount of money which can profitably be spent on advertising by any company. First, the volume of new business it is possible to obtain; second, the amount that can profitably be spent to secure that new business. If it can be shown that a definite volume of new business can be obtained for the expenditure of a proportion of the receipts which still leaves a good margin of profit, the question of the advertising appropriation becomes a simple business proposition and should be decided as such.

If, as I hope to be able to prove, in the great majority of cases new business can be obtained for the expenditure only of the actual savings in the cost of gas due to the increased output, and leaving the margin of profit untouched, it would seem that no company could reasonably neglect to adopt a progressive sales and advertising policy.

It is true that the most skillful advertising man cannot say that the investment of a certain sum will produce a certain definite volume of new business, and for this reason advertising is still regarded by many of the old school of business men as more or less of a gamble.

The skilled advertising man has, however, learned from that most excellent of all teachers, experience, that a certain sum invested in carefully planned publicity must result in returns which approximately average. If, therefore, he anticipates results based on the low point of his average chart, he is safe in guaranteeing those results and will himself be greatly disappointed if his guarantee is not greatly exceeded.

Fallacy of Making Appropriation Conditional on Year

The general practice in allotting appropriations to the sales and advertising departments appears to be to increase the previous year's appropriation a little if times are good, and to reduce it considerably if times are bad. Consequently it is almost impossible for either department to plan its work ahead intelligently and the results obtained are far poorer than they otherwise would be. In fact, it is often difficult for them to produce any tangible evidence of the degree to which they have executed their primary function—the sale of gas.

There is unfortunately a tendency to judge the efficiency of the new business departments entirely by their profit on the sale of appliances and to overlook their real reason for existence. This policy would seem to be comparable to judging the success of the sales department of a tobacco company by the profit made on the sale of cigarette papers.

In view of the trend of modern business it is remarkable that whilst every device known to science which can be used to reduce costs or improve service has been adopted by our engineering departments, little effort has been made to employ the equivalent advances made in the sciences of advertising and salesmanship.

For this condition of affairs I believe that we, the sales and advertising men, are totally to blame. It is not to be believed that an expenditure of thousands of dollars upon some engineering improvement is made at

the direct instigation of the executives of any company. On the contrary, the engineering department, before asking for any appropriation, is careful to prepare an elaborate report proving that the advantages of the improvement in question more than outweigh its cost, and it is only on the conclusive showing of this report that the expenditure will be approved.

New-business departments do not, on the other hand, prepare a statement of anticipated results which would justify an annual appropriation commensurate with the importance of the work which, in the interests of the company alone, they should be expected to do.

If those responsible for the new-business departments would carefully survey their territories and decide upon the volume of new business they could reasonably expect to produce during the coming year, and could guarantee to obtain this new business at a cost which would be profitable to the company, they would be in a position at least as favorable as that of the engineering or other departments in asking for appropriations.

It may be objected that whereas engineering improvements are a capital charge, advertising expenditure must be charged against revenue. The opinion of the members of the American Bankers' Association should cover this objection, and while it is not claimed that it would be good bookkeeping to charge advertising to anything but revenue, the good-will created by advertising is as valuable an asset to any company as any of the material that appears upon the inventory.

When the new business departments undertake to secure a definite volume of new business during the year the company has automatically adopted a policy of expansion which must not only increase its good-will value but at the same time have a vitalizing influence on every officer and employee. Further, the sales and advertising departments are for the first time placed on a definite efficiency basis.

The executives of gas companies are first and foremost, business men whose primary object it is, in the broadest sense, to sell gas and any argument that goes to prove that more gas can be sold at a profitable figure must receive their careful consideration.

The plan I am about to suggest as possibly worthy of the consideration of the new-business departments involves, therefore: (1) A guarantee to secure a definite increased gas consumption during the fiscal year; (2) An additional guarantee to secure this new business at a cost not to exceed a specified maximum, and, (3) The presentation of a chart showing, in the great majority of cases, that the cost of securing the business will be more than offset by the saving in the cost of gas due to the increased output.

The actual volume of new business that is to be guaranteed during the year will depend entirely upon local conditions, and is not of material importance to the success of the plan. It may, however, be said that the greater the volume that can be guaranteed, the better in every way will be the showing. In most cases the simplest plan is to make a superficial survey of the possible field and then undertake to increase the present annual output by a definite percentage.

The cost of securing this new business will again vary with local conditions, and the results of previous sales efforts must be used as a guide in preparing this estimate.

To be of some assistance in deciding this point, the estimated increased gas consumption resulting from a number of carefully planned sales efforts was compared with the cost of advertising, salesmen and supervision, and it was found that the cost averaged 92 cents per dollar of estimated increased revenue, excluding any profit on the sale of appliances.

Allowing, for reasons which will be explained later, for the profit on ranges and water heaters only, the cost was reduced to an average of 15 cents per dollar of estimated increased revenue.

In preparing these figures the credit taken was based on the ascertained average annual consumption of each appliance. These figures were obtained by the sales manager of each property and approved by the general manager before being used. It should be noted that no credit was taken for any appliance which replaced an existing appliance, as it is essential to the success of the plan that the revenue shown should be increased revenue only.

These estimated increased revenue reports are of inestimable value to any gas company, large or small. They should be checked periodically against the gross revenue reports. If it is found that the gross revenue does not increase in proportion to the estimated increased revenue, a general or local falling off in the consumption on existing appliances is indicated and may possibly be corrected by some good advertising regarding the increased use of existing appliances.

It will have been noticed above, that no credit was taken for the profit on the sale of appliances other than ranges and water heaters, and it may be interesting to note that in several cases which were analyzed the profits on the sale of these appliances alone were more than sufficient to pay the expenses of the sales and advertising departments. The average cost was raised to 15 cents by reason of the fact that several of the companies did not handle appliances of any kind.

Personally I am of the opinion that a good merchandising profit should be made on those appliances for which there is a created demand, but from a sales and advertising standpoint it is doubtful if there is any justification for profit on appliances for which the demand is yet to be created, as for instance house heating and industrial appliances, if it can be shown that such profit militates against an increased sale of gas through these outlets.

Some interesting figures can be obtained by capitalizing the gas revenue from the number of appliances which can be sold with a profit and adding to this the profit on the appliances, and then comparing this total with the capitalized gas revenue which would be obtained from the number of appliances which it is estimated could be sold without a profit.

Paying for New Business Out of Reduced Costs.

The new business departments having decided upon the cost for which they are prepared to undertake to secure the guaranteed volume of new business, it remains to be seen if the company can profitably bear this cost, and if the proposition is sufficiently attractive to secure the necessary appropriation from the management.

Any manufacturing or mercantile concern that could hold its sales and advertising expenses down to 20 per cent of the selling price would consider itself in an exceptionally fortunate position.

The gas company is in a different position in that the placing of an

appliance by the new-business departments represents a revenue rather than an immediate profit. It can, however, be readily proved that the placing of any appliance will produce a gas revenue for an average of at least ten years. By capitalizing this revenue it is possible to arrive at a basis comparable with the sale of ordinary merchandise, and one that more graphically represents the value of the new business to the company.

Allowing 7 per cent interest on the capitalization, the present worth of a revenue of one dollar for ten years is roughly $9.60, and this figure therefore represents the value to the gas company of every dollar's worth of increased business due to the efforts of the new-business departments. It is important to note that the cost of new business should be regarded as a percentage of this capitalized value rather than as a percentage of the revenue itself.

Now, if an analysis be made of the operating expenses of any gas company, it will be found that the cost of a thousand feet of gas can be divided into two parts, (1) the actual cost of the gas in the holder, which may for the purpose of this paper be regarded as constant, irrespective of the output, and (2) the cost of distribution, collections, supervision, interest on capital invested in plant, etc., which, in normal circumstances, gradually becomes less as the output increases.

In all but the most exceptional cases, therefore, *every foot of increased gas consumption is worth more to the company than each preceding foot,* and if an estimate be prepared showing the increased cost of distribution, collections, supervision, interest on additional capital expenditure, etc., it will be found that this expense per thousand feet of additional output is not nearly so great as the equivalent expense per thousand feet of the original output. The new total, including the guaranteed increase, must therefore cost less per thousand cubic feet than did the original output.

To consider an actual example. The estimated saving by the addition of 150,000,000 cu. ft. per annum to the output of a company sending out 3,000,000,000 cu. ft. of gas per annum was $37,500, this figure being furnished by the heads of the departments interested and other than the sales department. In order to make the value of this saving in cost apparent it is necessary to capitalize it on the same basis as the estimated increased revenue, that is for ten years at a rate of 7 per cent, or roughly $360,000.

The increased revenue guaranteed by the sales department in this case was $127,000, or capitalized $1,217,000. This company could, therefore, afford to pay $360,000 to secure a capitalized revenue of $1,217,000 without affecting their previous margin of profit between the cost of gas per thousand cubic feet and the selling price per thousand cubic feet. As a matter of fact, the sales manager's estimate of the cost of securing this business, ignoring profit on appliances, was $102,000 so that this particular company stands to save $12,500 per annum in the cost of gas, in addition to the profit on the additional output based on the old margin.

Some time ago the writer had occasion to make sales analyses of the properties of a large holding company, the investigation covering a number of large and small subsidiary companies operating under a great variety of conditions. In every case it could be shown that the savings effected by a reasonable increase in output more than offset the cost of securing the new business. Peculiarly enough, the worse the apparant financial position of the company, the more was new business effort necessary. In fact, we were able to show that two companies, the condition of which was regarded as desperate by the holding company, could be put on a solid financial basis by a little consistent and efficient new business effort.

The analysis is very readily made for any property, but it may be interesting to note that out of all the properties analyzed there was not one that could not afford to pay 10 per cent of the capitalized estimated increased revenue to secure the new business and still repay itself this outlay out of the savings effected in the cost of gas.

It is not claimed that the plan exactly as outlined must necessarily apply in all cases but it is hoped that it will at least suggest to the new business men modifications which may help to establish on their rightful plane the big factors in the future development of the gas industry—the sales and advertising departments.

SANITARY HEATING COMPANY of Brooklyn, N. Y., will occupy Booth No. 52½ at the American Gas Association Convention Exhibit.

Louisville Company Inaugurates Home Economy Department

A new field of activity has been opened for the commercial department of the Louisville Gas & Electric Company with the inauguration of its home economy bureau. The innovation will be in charge of Miss Grace Otter, under the supervision of Robert Montgomery, manager of the commercial department, who is responsible for the idea. Miss Otter is a graduate of the Kentucky College at Danville, has completed a course in home economics and is a specialist in dietetics.

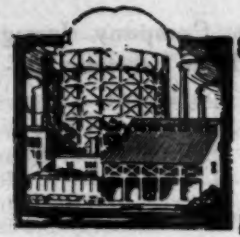
If a Louisville housewife finds herself confronted with a dinner or luncheon party and a lack of ideas as to menus, table arrangements, or the proper way to cook a dish, she need only telephone Miss Otter who will immediately respond with suggestions, and will lend every possible assistance to make the affair a success.

If a housewife is puzzling over the problem of relative food values with an eye to economy or health, Miss Otter will solve her problems.

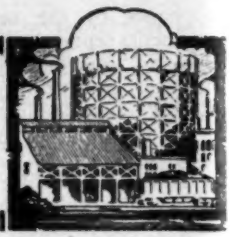
If it is a problem of house management, a task of finding the simplest and easiest way of arranging the housework, or the quickest and best way to wash the clothes or iron them, to clean house or cook a meal, Miss Otter is ready to assist the housewives of Louisville and vicinity.

Miss Otter's department will be fitted up with all the important gas and electric labor saving appliances for demonstration purposes. A series of newspaper advertisements which began in the Louisville daily papers last week concerning the "New Service" feature photographs of Miss Otter demonstrating various appliances, and invite requests for her new booklet, "Economy Helps for the Twentieth Century Housewife with Tested Recipes." The booklet contains, besides menus and recipes, many suggestions for the saving of money, time and labor in household management.

AMERICAN GAS & ELECTRIC COMPANY has declared regular quarterly dividend of 2½ per cent on common and 1½ per cent on preferred stocks, common payable Oct. 1 to stock of record Sept. 19, and preferred Nov. 1 to stock of record Oct. 17.



NEWS OF THE GAS INDUSTRY



Otto S. Lasche Wins Prizes for Window Displays at Convention

Otto S. Lasche, display manager for the St. Clair County Gas & Electric Company, of East St. Louis, Ill., won two first, two second, and one third prize for window displays at the recent convention of the International Association of Display Men, held in Chicago. This was the largest number of prizes gained in the contest by any St. Louis man, though the St. Louis total ran up to twenty-nine. Mr. Lasche has been in charge of the window displays of the St. Clair County Gas & Electric Company for the past year, and his exhibits of various methods of using gas to good advantage have attracted much attention.

Louisville Company Completes Community House for Coal Mine Employees

Saturday, Sept. 6, the Louisville Gas & Electric Company completed its community house at Echols, Ky., and turned it over to the miners with appropriate ceremonies. In honor of the occasion the miners gave a picnic with the minstrel troupe of the employees of the Louisville Gas & Electric Company and officers of the Louisville company as guests. More than 2,000 people attended the picnic. There was a baseball game in the afternoon, and in the evening a minstrel show was held in a natural amphitheater formed by two hills. The meeting was addressed by Donald McDonald, manager of the Louisville Gas & Electric Company. A part of the program included a tour of inspection of the coal mine for the visitors.

THE PEOPLES GAS LIGHT & COKE COMPANY, of Chicago, was represented at the eighth annual convention of the National Safety Council in Cleveland, Oct. 1-4, by John P. Stokes, of the engineering and street department of the company.

St. Louis Will Extend Its Gas Lighting System

James A. Hooke, director of public utilities of St. Louis, has dismissed his plan for the electrification of the entire lighting system of the city of St. Louis, Mo., and has turned over to the Board of Aldermen a plan for dividing the lighting contract of the city into three parts, one for electric lighting, one for gas lighting and the third for naphtha lighting.

The Laclede Gas Company owns the poles and equipment for gas lighting and those for electric lighting, but the service on the naphtha lights is furnished by the Welsbach Company of Philadelphia. The plan calls for the elimination of the naphtha lighting, if the cost is not too great. If the expense of the change runs too high the naphtha lights will be used for a year longer. The new plan proposes that the poles and equipment be bought and gas purchased on the 1,000 cu. ft. basis. The city is at present paying $526,742 annually; under Mr. Hooke's plan it was save about $25,000.

Recent Additions to A. G. A. Exhibitors List

The following is the latest report received of additions to the list of exhibitors for the American Gas Association convention:

Booth 58½—Schaeffer & Budenberg Manufacturing Company, Brooklyn, N. Y.

Booth 59½—The U. G. I. Contracting Company, Philadelphia, Pa.

Booth 60½—The Foxboro Company, Inc., New York, N. Y.

Booth 64½—Dayton Manufacturing Company, Dayton, Ohio.

20,000,000 Cu. Ft. Gasser Brought In

The American Oil & Refining Company reports the bringing in of a 20,000,000-foot gas well on the Bauchus farm in section 17-4-6, three miles north of Ada, Okla.

Accuracy of Meters Shows Up Well in Recent Test

According to a report received from the Consolidated Gas Company of New York, during the month of August last there were 905,501 gas meters in use in New York City in the boroughs of Manhattan and the Bronx. Of that number 25 meters were tested as to accuracy by the Public Service Commission, First District, of New York. Tests showed that 11 of the meters were correct, 13 were running "slow"; in other words, not measuring all the gas those 13 consumers had used, and only one meter was found to be running a trifle "fast."

Koppers Company of Pittsburgh Exhibits Coal By-Products

Statement Gives Reason Certain By-products Are Produced

An exhibit of the by-products obtained from the coking of Illinois coal formed one of the interesting features of the great Chemical Exposition in Chicago the week of Sept. 22. This display, which was under the direction of the research department of the Koppers Company, of Pittsburgh, was based upon a test recently made by the National Bureau of Standards and the National Bureau of Mines at the Minnesota By-Product Coke Company's plant at St. Paul.

On a large table in the center of the booth was shown a pile of the coal tested, and in flasks grouped around it the various by-products obtained from it. The exhibit was arranged in exact proportion to the recovery from 100 lb. of coal to the relative quantities were plainly shown.

The yields per net ton were as follows:

Coke, 1,420 lb.
Ammonium sulphate, 28 lb.
Tar, 8.23 gal.

Crude light oil, 4.03 gal.
Gas, 11,660 cu. ft.

The remainder of the Koppers exhibit was made up of two very large drawings of a modern by-products coke plant, a model of the Koppers oven and photographs of recent installations.

The examination of coal for by-product recovery cannot be made by ordinary methods of chemical analysis, declares a statement issued from the company's laboratory in connection with the exhibit. Characterizing as incorrect and misleading the common idea that ammonia, gas, benzine, etc., are contained in coal as iron is contained in iron ore, the statement says:

"It is a comparatively easy matter for a chemist to analyze the iron ore and tell you exactly how much iron can be obtained from it. With a sample of coal it is entirely different. Coal does not contain ammonia, naphthalene, benzine, toluene or any of the thousands of by-products for which it is famous, and what amounts of these substances can be produced from a given sample of coal cannot be determined by the most expert chemist in the world if that chemist does not have an intimate knowledge of the by-product plant operation and of the behavior of different kinds of coal under operating conditions. A piece of coal, from this standpoint, is like a piece of uncultivated soil. Coal does not contain ammonia any more than the soil contains potatoes, but it contains the elements that under certain conditions may combine and form ammonia and other substances. The amount of ammonia that a given coal will produce depends upon the rate of heating, the initial and final temperature, the size, shape and material of the container, the presence of foreign substances, and other conditions. The same is true of each of the other numerous by-products."

Central Illinois Company Will Raise Steam Heating Rate

A proposed advance in rates for steam-heating service by the Central Illinois Public Service Company is being considered by the State Public Utilities Commission. The cities involved in the petitions are Tuscola and Matoon, Ill. Commissioner Shaw is in charge of the hearings.

Gehnrich Indirect Heat Oven Company Employees Receive Life Insurance

The Directors of the Gehnrich Indirect Heat Oven Company at their last board meeting voted to present a life insurance policy to everyone of their employees who have been with them for a period of two months or longer.

The insurance took effect Aug. 4, and policies were distributed in amounts of:

$2,000 to those having served 3 years or more.

$1,500 to those having served 18 to 36 months.

$1,000 to those having served 6 to 18 months.

$500 to those having served 2 to 6 months.

The insurance is retroactive and in addition to the life insurance feature the policies carry disability benefits during the time the insured is in employ of the company. The total amount of insurance is close to $100,000.

Fall River Company Will Issue 5,000 Shares of "Employees' Stock"

The Fall River Gas Electric Light Company has asked the Gas and Electric Light Commission of Massachusetts for authority to issue 5,000 shares of employees' stock at a par value of $10 in addition to 7,000 new shares of capital stock at a par value of $100. The company states that the request is made "for the mutual benefit of the corporation and its employees and to enlist the interest of the latter in the efficient operation of the business."

The authorized outstanding issue is now 21,000 shares at a par value of $100. The proceeds of the issue will be used for extensions and improvements in the plant and general purposes.

Rochelle Company Makes Application for Advanced Rate

An application for an advance in rates for general gas service in Rochelle, Ill., has been entered by the Rochelle Gas Company before the State Public Utilities Commission. The company is also applying for a continuation of gas rates authorized by the commission in orders of April 17, 1918, and March 5, 1919.

Chicago Pneumatic Tool Company Offices Move to New York

The Chicago Pneumatic Tool Company plans to move its general offices from Chicago to its new office building in New York, which is being erected at 6-8 East Forty-fourth Street.

The new building of the company will comprise ten floors, all of which will be taken up by the company. The ground floor will be devoted to a display of the "Chicago Pneumatic" products, including oil and gas engines, air compressors, pneumatic hammers, pneumatic and electric tools and rock and coal drills.

Chicago Company Petitions Rehearing of Rate Case

The question of higher gas rates for Chicago will be reopened before the State Public Utilities Commission at the earliest opportunity. The Peoples Gas Light & Coke Company has petitioned the commission to grant an immediate order which shall fix an early date for a rehearing of the case, which terminated last July with a decision not entirely satisfactory to the company. The promise by the commission to valuate the property of the company and base new rates thereon is to be hurried into effect.

Chicago Will Fight for Home Rule of Utilities

Home rule over public utilities was set forth as the big objective of Chicago in the coming constitutional convention at a preliminary meeting of the city council's constitutional convention committee. Concentration on the public utility issue, and one or two others, was promised at the meeting.

George E. Cole, who attended the meeting, told the committee that he believes the city could get the home rule power it desires if it would agree to a provision limiting the representation of any one county in the State Senate to one-third of the membership of that body. He said that a great deal of Illinois State jealousy of Chicago is due to the fear that the city will eventually dominate the State Legislature.

Brooklyn Gas Strike Broken

The strike of the gas fitters against the Brooklyn Union Gas Company was officially declared off on Sept. 26. This was done at a stated meeting of the Gas Workers' Protective Union. A resolution was passed officially declaring the strike off and directing the men to go back to work. There were present at this meeting representatives of the American Federation of Labor, and they counseled the men to return to their employment. The men immediately notified the company that they were ready to return to work.

The strike started on Aug. 14, when 409 fitters quit work upon their demand for higher pay being refused. There was no union of the employees at the time of the declaration of the strike, but shortly after the men left the union was formed. This was done under the auspices of the American Federation of Labor.

On Sept. 17 all the men employed in the gas works broke away from the union and returned to their work. From that time on the desertions from the union occurred every day in small numbers, until Sept. 24, when thirty-two fitters returned to work in a body. On Sept. 25 about 100 men showed their willingness to return to work. It was then that the leaders of the union issued directions for the meeting of Sept. 26 and called off the strike. The men returned to work, under their old conditions and their old rates of pay, as individuals. No concessions were made to them. The strike affected the Brooklyn Union Gas Company, the Flatbush Gas Company, the Newtown Gas Company, the Jamaica Gas Light Company, the Woodhaven Gas Light Company and the Richmond Hill & Queens County Gas Light Company.

New Gas Flow in Waco, Tex.

It has been estimated by experts that there is an immense volume of gas in the well that is being drilled by the Waco Oil and Refining Company a few miles north of Waco, Tex. This is based on the fact that the well is 2,750 ft. deep and the gas is forced through a great depth of water. The drill is going through a formation of lime rock at present.

Great Emphasis Put Upon Value of Gas as Fuel at Steel Treaters Convention

Local Gas Companies of Chicago Had Booth Displays of Industrial Installations

Gas was hailed on all sides as the perfect fuel for the treatment of steel at the first exposition and convention of the American Steel Treaters' Society, held at the Seventh Regiment Armory in Chicago the week of Sept. 22. The enthusiasm which has in one year welded together a body of more than a thousand men into a powerful society was everywhere manifest from the splendid exposition of steel-treating machinery at the armory to the technical sessions at the Hotel Morrison. Over six hundred men left their plants to attend the convention, and the total attendance at the exposition was over four thousand. That attendance represented only those interested directly in the industry.

The emphasis put upon gas, both in the exhibits and in the papers, was tremendous. Oil and electric engines occupied only a small proportion of the general attention, and the verdict of the whole society was distinctly and unequivocally for gas. Horace H. Clark, secretary of the Illinois Gas Association and chairman of the Chicago chapter of the new organization, declared that in the Steel Treaters' Society the gas industry has found one of its most powerful allies. The local gas companies had booths at the army; at the headquarters of the Peoples Gas Light & Coke Company representatives of the company's industrial heating laboratory were kept busy answering inquiries as to industrial installations in which this company has been a pioneer; and the Public Service Company of Northern Illinois, under the direction of Mr. Clark, had on display an elaborate map of the territory which it serves and two stereomotographs which showed photographs of the use of gas in the plants of the Chicago district. In one plant gas was employed for more than thirty distinct processes.

The success of the exposition from a business point of view was evident from the one fact that every engine on display had been sold many times over by the end of the week. Prominent among the exhibitors of gas engines were the following: The Surface Combustion Company, of New York; Tate-Jones & Co., of Pittsburgh; Strong, Carlisle & Hammond Company, Cleveland; Standard Fuel Engineering Company, Detroit; American Gas Furnace Company, New York City; Chicago Flexible Shaft Company; Denver Fire Clay Company; Ferguson Furnace Company, Toledo; Gilbert & Parker Manufacturing Company, Springfield, Mass., and the Modern Equipment Company, Taunton, Mass.

Gas for Firing Hand-Painted China

George M. Daniel, of the gas sales department of the Atlanta Gas Light Company, has designed a burner for the use of gas in china kiln in place of crude oil. The Atlanta Gas Light Company has already changed the burners in two china kilns in the city of Atlanta, Ga., for the use of gas. Gas has proved to be both cheaper and much better for this work than crude oil.

A Boost for Utility Securities

C. W. Barron, owner of the *Wall Street Journal*, in a recent lay sermon, said:

"The law of investment and of speculation come under the same Christian laws—social and mutual service. One should not put money into an investment that does not promote public good, and the best investments will be found in those that perform the widest public service, and that rest upon the widest human consumption and needs."

20,000,000 Cu. Ft. Gasser Brought In in Lawton, Okla.

A gasser making 20,000,000 cu. ft. has been brought in by the National Oil and Development Company in the south end of the Lawton, Okla., field two miles west and a half mile north of Walters, Okla. There are no indications of oil in the well. This greatly extends the area of the Keys field of Oklahoma.

THE LOVEKIN WATER HEATER COMPANY, of Philadelphia, Pa., has opened a New York office at 158 Lafayette Street, with E. E. Jarrett in charge.

The Future of Gas Is Industrial

This Theme Held Important Place at the Twenty-Sixth Annual Convention of the Pacific Coast Gas Association—The Following Report Indicates that Tremendous Progress Has Already Been Made, but that the Industry Is Only on the Threshold—The Influence of This Meeting Should Be a Strong Factor and Aid Toward Greater Progress

The twenty-sixth annual convention of the Pacific Gas Association, held at Los Angeles during the third week in September, may best be described as an excellent working convention. By that expression we mean that while there was nothing particularly spectacular offered for discussion in the actual papers presented, yet from the points of view of regular attendances at each and every session and earnest discussion of the points of interest brought up, there resulted more substantial benefit to the gas industry at large than can be claimed for almost any previous convention of the P. C. G. A.

It was a convention of unusually good attendance. The member companies were substantially represented, and so were the various other branches of the industry, notably the appliance branch. Several past presidents answered to their names on the opening day roll call, including E. C. Jones, John Clements, W. B. Cline, F. A. Leach, Jr., William Baurhyte, C. S. Vance, F. A. Cressy, Jr., and C. B. Babcock. One prominent gas man, better known east of the Rockies than he is west, C. N. Stannard, of Denver, Col., came all the way to the Pacific Coast to secure our affiiliation with the American Gas Association. That new step—the proposal as presented by Mr. Standard was accepted by unanimous vote—was one feature of this year's convention that signaled it out from its predecessors.

Another feature, of which more may be written and heard of in the near future, was a debate upon the heat unit question in which the advocates of a lower standard in British thermal units for gas manufacture and distribution were opposed by the engineer of the California State Railroad Commission whose order fixing the standard at a minimum of 570 B.t.u.'s but recently went into effect. When the committee, which is to look into this matter gets down to business, some interesting disclosures may be looked for. If the claims of the low standard men are verified, these disclosures will result in a complete subversion of all the hitherto accepted theories and practices in gas manufacture from the heat unit standpoint.

Other features of the convention of special mention included a masterly address by the association's president, John D. Kuster, and the report of the Public Policy Committee presented by S. Waldo Coleman. Day by day this question of public policy seems to command the attention of public utility heads to a greater and yet greater degree. Certainly so far as the Pacific Coast is concerned, this is already in evidence everywhere, for the public policy question creeps into even technical papers. It was notable at the Coronado convention of the Pacific Coast Section of the National Electric Light Association last May, and it is clearly notable from a perusal of most of the papers which were presented at the recent Pacific Coast gas convention in Los Angeles.

The convention was held at the Hotel Alexandria, where most of our visitors stayed. The entire convention assembled promptly to the call of the chair on Tuesday, Sept. 16. According to time honored custom, it opened with an address of welcome from the mayor of the city, who complimented in hearty fashion the men of the gas industry who had done so much of late to help the cause of civilization not only in the home, in the workshop, in the factory, but in a cause far more important to the civilized world for the time being, the cause of liberty. Mayor Snyder's address of welcome was suitably replied to by the "daddy" of the association, E. C. Jones, who assured the people of California that in this day of twentieth century progress "service" was and would continue to be the main thought in the minds of the great engineers of the country.

In the list of regrets for nonattendance read by Henry Bostwick, the association's secretary, appeared the name of John A. Britton, who, because of pressure of business at the last moment, was unable to make the trip upon which he had set his heart, and for which he had planned some weeks before. Mr. Britton, however, came through with a letter of cheer and encouragement which was read by President Kuster at the annual banquet.

A note of sadness was sounded with the announcement of the sudden death of Col. Henry C. Keyes, president of the Sacramento Gas Company, which occurred on the very eye of the convention.

In the reports of standing committees a point worthy of mention was the suggestion made, by the committee on piping of buildings for gas, for an advertising campaign in the building trades journals and architects' magazines. The idea, of course, is to take time by the forelock and pipe buildings for gas at the time of their construction in place of tearing the walls to pieces later, as is often found necessary to-day.

The report of the public policy committee advocated a policy of encouraging capital investment. It was thought eminently desirable by the committee to impart to the public utility business an atmosphere of such character as would induce high-class men and women to enter into that business as a life's occupation. The committee also recommended a greater publicity to be given by the public utilities to the financial side of their business. Customer ownership, which was first tried out on the Pacific Coast by the Pacific Gas & Electric Company, was strongly advocated. It was suggested that a good field for an investment campaign might be found among the holders of Liberty Bonds.

That elusive thing, public opinion, was described in the report as a concert of individual human opinion, and therefore not infallible but to be educated and encouraged. Every day of this age signs of this truth grow more and more apparent.

The report of E. C. Jones as librarian of the association included a recommendation of the appointment of Dwight C. Jones, son of the chairman, as assistant librarian. This appointment, of course, was confirmed by the convention.

The report of the membership committee, presented by Vice-President Day, showed applications for membership since the last convention amounting to eighty-four, indicating a healthy state of affairs in view of the fact that, so

far as convention activities were concerned, last year was a blank in the history of the association.

Mr. Stannard, on presenting his proposal for an affiliation with the American Gas Association, stated that he represented President George B. Cortelyou and the officers of the parent body. The assistance of the gas men of the Pacific Coast was invited for the good of the industry and its members; that eyes were turned to the West, with its men of active brains and its endless resources, and that the question on every man's lips is, "What can the Coast do for the national body?" It was not a merger that Mr. Stannard proposed, not a consolidation; he suggested nothing that would involve any loss of identity on the part of the Coast association.

"The American Gas Association wants the benefit of the experience, counsel and advice of you men of the Pacific Coast," said Mr. Stannard. "It wants Western men in its working committees that manage the affairs of the association. Affiliation is in the air."

Then Mr. Stannard made a direct offer to the association of membership on each of the five managing committees of the parent body, namely: the technical, manufacturing, accounting, commercial and advertising committees. He proposed a one year's agreement, which must, he thought, result to the benefit of all concerned in the establishment of closer relations and a system of co-operation between the East and the West, without financial responsibility of any kind.

President Kuster's report opened with a recital of the activities of the gas industry on the Pacific Coast since the last convention in 1917. It dwelt with emphasis upon the war work done, principally the manufacture of charcoal for gas masks from fruit pits, the establishment of munition factories and powder works, and an enormous increase in the output of trinitrotoluol from an average of 600,000 lb. a month before the war to a monthly average of 12,000,000 lb. It was interesting to the convention to hear that there were no less than "57 varieties" of essentials in war work turned out from the by-products of gas manufacture.

President Kuster heralded the discussion that came later when he spoke of the adoption of the State Railroad Commission of the standard of 570 B.t.u. for gas. The English, he said, had been compelled to fall back upon standards varying from 400 to 500 during the war, and, much to their astonishment, had found the lower standards more efficient, particularly in industrials. The association's president regretted the lack of striking inventions in the appliance line, and declared that this lack had resulted in gas engineers making cheaper gas that went to waste on inefficient appliances, so that high gas bills were still the rule.

The report spoke well for public utility regulation, but insisted that it would take time to educate the public as to actual conditions with which it is confronted. The agitator was abroad in the land, his one thought being to regulate rates downward, so that when the official body having jurisdiction of rate questions took upon itself to raise rates to meet certain emergencies a movement was at once set on foot to curtail the authority of that body. Municipal ownership was discussed and instances were cited where public utilities had been compelled to sell their distributing plants to municipalities. These, however, had in most cases resulted in the public finding out too late that bodies of municipal authorities were not composed of trained gas men. On the question of gas rates, it was to be generally observed that while the price of oil, labor and materials has increased variously from 75 to 300 per cent, the average price of gas sold to consumers to-day averages less than $1 per 1,000 cu. ft.

Mr. Kuster's report closed with a plea for the man who is twenty-four hours on the job. He said that labor agitation has resulted in a great general betterment of conditions for the working man, but that salaried men who sit at a desk and oversee the work formed by these men had been given no redress against the constant encroachment of the high cost of living. Mr. Kuster advocated a more generous treatment from the public utilities of what he called the twenty-four-hour man, even if it should go to a point where the public utility commission of the State were called upon to take care of the situation in an increase of rate schedules.

It is worthy of mention, as showing the working earnestness of the 1919 convention, that the papers read and discussed in this convention are not to result in mere empty talk and idle discussion, and then dropped from memory as has happened so often in the past. They are to be seriously taken up by the new board of directors, and reports upon the points worth while are to be presented to the next convention of the association.

The first paper presented for discussion was on "Cause and Effect of Public Opinion on Gas Sales," by Frank Weiss. This dealt largely with the attitude of the public toward the public utilities, notably in regard to gas rates and municipal ownership and urged, as the only practical means of meeting this attitude and correcting it, a better co-operation among the public utilities themselves, a bonding together in the common cause, not exactly eliminating honest competition but certainly departing from the old time custom of "knock."

The paper by B. S. Pederson on "Modern Gas Ranges," dealt principally with the thermostat regulator for gauging the heat in ovens. He declared that the so-called automatic oven is one of the greatest comforts of modern domestic science.

G. Douglass Mantle was to the fore with a highly interesting paper on "Advertising for the Selling of Gas," which is reprinted in this issue of the JOURNAL. The main point he brings out is the necessity for complete sympathy and co-operation between the new business and sales departments, and the advertising departments of the public utility. They must go hand in hand, he says, otherwise their various energies are scattered and fall like seed upon an unfertile ground.

In the papers on "Industrial Gas," which were bunched together for the purposes of discussion, the dominant thought appeared to be the placing of the cost of gas as secondary to the net results to the user. Some statistics were given; of these, one of the most interesting instance cited was the estimate of 78,000,000 cu. ft. of gas used each month in the shipyards on the coast, bringing the producer an average revenue of $41,000. It was urged that the gas revenues of every public utility should be in the future classified and segregated to show industrial sales. Enough was known at the present time to show that from the gas used in the preparation of various food products

the revenues amounted to not less than 53½ per cent of the total output, and revenues from sales to the shipbuilding industry not exceeding 10 per cent. This conclusively proves to the industry the value of the baker, the candy man and other small gas users. In other words, it is the small consumers that average the big total from which the gas companies derive their profits and not the big consumer whose enormous patronage is advertised in large capitals.

This idea of encouraging the small consumer was also presented by Capt. R. W. A. Brewer, of gas engine fame, late of the British army, in a letter which was read at the convention.

H. R. Basford, representing the gas water heater industry, declared his opinion that the future of gas is industrial, and urged that the gas companies be called upon to allow special rates for industrial use of gas.

W. M. Henderson's paper on "Pipe Joints," also reprinted in this issue of the JOURNAL, is a scholarly discussion of a very important phase of the practical side of the gas industry. It should be widely read.

The all important discussion of heat unit standards took place on Thursday afternoon, which was the last business session of the convention. It was led off by Leon B. Jones, who opened it with the explanation that the discussion to follow was not intended as an attack upon public utility regulation, for he regarded General order No. 58, recently issued by the California State Railroad Commission, for the observance by gas companies generally throughout the State, for instance, as an example of wise regulation. He said he thought it necessary to have definite rules for the conduct of gas companies throughout the country. He did, however, venture to open for discussion one rule contained in the general order, namely, the rule placing the heat standard of gas manufacture and distribution at a minimum of 570 British thermal units.

He considers it the duty of the Pacific Coast Gas Association to take the burden of proof from the shoulders of the public utilities, and to the best interest of the industry not only from the standpoint of the producer, but, also, of the consumer, to consider this heat unit problem from every aspect, including the values in cubic feet, cost of manufacture, and most important of all, the best heating value for the consumer. It was his opinion that whatever argument should follow his opening remarks would better lead to the appointment of a special committee to investigate this problem at its leisure and report its conclusions to the association at some time in the fuure thereafter to be determined.

E. C. Jones seconded his son's proposition. He too, thought the subject should be treated as affecting the consumer more than the manufacturer, and that in the consideration of the various features presented by the problem all matters concerning the cost of oil or advantage to the public utility should be eliminated from the discussion.

At this point what had done more than anything else to prompt the proposed inquiry was disclosed when Harry L. Strange, formerly manager of the Honolulu Gas Company, and but recently from the firing line in France where he served throughout the war as a major in the British army, and in his professional capacity applied his technical knowledge to great advantage, presented for consideration certain matters that had fairly revolutionized the gas industry across the seas.

Major Strange told the convention that in England during the war it had been found necessary to obtain large quantities of tar for the manufacture of trinitrotoluol. This had been done at the expense of the British thermal units and candlepower, so that whereas before the war the standard for gas consumption had ranged between 500 and 550 B.t.u., it had been found necessary to descend as low as 400, in some cases, 360 B.t.u. in distributing gas to consumers. All control has been released; it was the war before everything, nothing else mattered.

"As a matter of fact," said Major Strange, "for many years the British thermal unit standard had been on a gradually decreasing scale in England, but the gas engineers generally were hardly prepared for what followed and what they at first regarded as a necessary impairment of gas service. They had noticed, to their astonishment, a very high degree of efficiency from gas at 400 B.t.u. It set them thinking, and caused them to wonder if, after all, all the accepted theories and practices of ages would have to be turned topsy turvy and make way for a new and decidedly startling discovery. The English gas man does not waste much time, however, in wondering. The armistice once declared, a committee of the ablest brains in the country, from the engineering profession and from the university faculties, was appointed to investigate. They were given instructions to forget everything that had ever been learned and get the actual facts.

"This committee," continued Major Strange, "was not yet ready to report, but it was no secret that it had been unofficially discovered that gas at 400 B.t.u. did better service than gas at 600 B.t.u. The actual fact is that we know nothing whatever about British thermal units, flame temperature or candlepower, save to discover that all our old acceptances were wrong. It is on record now that 420 B.t.u. has been found to be the greatest efficiency standard."

Major Strange also stated that it had been found practicable to add air to the old standard gas and get better results per British thermal unit.

E. C. and L. B. Jones were heard in support of the disclosures made by Major Strange. The elder Jones offered some practical comparisons made in the works of the American Can Company in their establishments, respectively, in Oakland and Los Angeles. In the former the soldering of cans was done with artificial gas at 550 B.t.u., while in the southern city natural gas at 1,178 B.t.u. was employed. The company kept track of results. From the standpoint of the amount of gas used per 1,000 lineal ft. of can soldered, the result of this investigation showed an average of 24.8 cu. ft. of the lower standard gas used per 1,000 lineal ft. of material, to 38.3 cu. ft. of the higher standard gas. Concerning costs, while it was true that the Oakland gas was more expensive per 1,000 cu. ft. than the Los Angeles gas, nevertheless, by bringing them down to the same point of financial outlay it was shown that the Los Angeles gas cost the consumer more, per unit of work accomplished, than the other.

E. C. Jones took occasion also to remind the convention that as far back at 1911 he had recommended 500 B.t.u. as the standard for gas manufacture.

L. B. Jones talked for an hour in a practical discussion of the problem. In the course of his address he instanced some tests made by the Welsbach Company, the results of which were offered in testimony before the First District Commission in New York State. These tests showed the comparative values in illuminating

efficiency between the gas used at the company's factories at Gloucester, Mass., which was of 450 B.t.u. standard, and the richer gas turned out by the U. G. I. Company at Philadelphia at 650 B.t.u. Taking gas mantles as a test medium it had been discovered that for illuminating purposes a greater efficiency had been derived from the leaner gas, foot for foot.

The State Railroad Commission was represented by L. S. Ready, chief gas and electric engineer, and his assistant Mr. Bryant. Mr. Ready stated frankly that he was glad the discussion had been brought up and that, speaking for the commission, he was only too glad to receive all proofs available that would enable the commission to decide intelligently upon this grave question of heat unit standard. The investigation, which he had pursued in his official capacity, had shown him that the gas plants in California had not adopted any consistent standard so that the gas manufactured in this State had been variable as to heating values. He admitted that the commission had placed the burden of proof on the public utilities. It was the only way, he thought, to arrive at a proper conclusion.

As to the recent order of the Railroad Commission, it had for the present at least, fixed the standard for gas manufacture in California at 570 British thermal units. That standard, said Mr. Ready, would have to be lived up to until sufficient proofs were brought before the commission to induce a modification of this order. As to efficiency, the commission had made tests of gas at 670 B.t.u. by carburetting a commercial gas with gasoline vapor, and compared it with gas of 535 B.t.u. very much to the advantage of the higher standard. Mr. Ready admitted, however, that this test could not be regarded as conclusive of the question.

In Ventura the manufactured gas at 550 B.t.u. had been recently replaced by natural gas at 1,100 B.t.u., with the result of considerable reduction in consumer's bills. This point, however, could not be regarded as entirely relative to the question at issue.

The end of it all was that the convention adopted a resolution recommending the appointment of a committee by the incoming board of directors to thoroughly investigate the heat unit problem, and, as before stated, to report at such time as a really practical solution of the problem should offer itself.

The last thing done at the convention was the appointment of the officers and directors to serve during the ensuing twelve months. These were:

President, A. B. Day, of Los Angeles.

Vice-president, L. B. Jones, of San Francisco.

Secretary and treasurer, Henry Bostwick, of San Francisco.

Directors, John A. Britton and C. B. Babcock, of San Francisco; F. A. Leach, Jr., of Oakland; W. B. Cline, A. B. Macbeth, of Los Angeles; W. M. Kapus, of Portland, Ore., and D. J. Young, of Tacoma, Wash.

On Thursday evening the association held its annual banquet at the Hotel Alexandria. President Kuster was in the chair, but delegated the duties of toastmaster to Paul Overton, counsel for the Los Angeles Gas & Electric Corporation, who acquitted himself in most worthy style. The program of entertainment included instrumental music, songs, dancing and speech making. Among those who made after dinner speeches were: A. B. Day, L. B. Jones, D. J. Young, W. M. Kapus, William Baurhyte, E. C. Jones, H. L. Strange, F. S. Myrtle, C. B. Babcock and C. M. Stannard. The day following the association picnicked at Redondo Beach, indulging in the customary amusements of bathing, lunching and dancing.

Thus began and ended the activities of the twenty-sixth annual convention of the Pacific Coast Gas Association.

Personal Notes

C. L. Gerould, of Norfolk, Conn., succeeding N. L. Clay, who recently resigned, has been appointed manager of the gas division of the Carolina Power & Light Company at Raleigh, N. C. Mr. Gerould is a man of many years' experience in every division of the gas industry, and under his management the company reports that it expects to give the best of service. Mr. Gerould will give his entire time to the gas plant at Raleigh, a manager being appointed for the plant at Durham, N. C.

O. T. Knight has resigned his position as commercial manager of the Peoples Gas Light & Coke Company to become general manager of the Champion Stove Company of Cleveland.

Mr. Knight is a graduate electrical engineer and completed a course at the Drexel Institute of Philadelphia after two years at the University of Pennsylvania. After some initial business experience in the East he spent some years in South America developing fresh fields for commercial activities. Returning to this country he accepted employment with the Westinghouse Electric Manufacturing Company and about seven years ago joined the forces of the Peoples Gas Light & Coke Company.

Frank M. Lester, advertising manager of the Public Service Company of Illinois, has been appointed to represent the Illinois Gas Association on the managing committee of the newly formed advertising section of the American Gas Association.

J. G. Learned, vice-president of the Public Service Company of Illinois, and H. H. Clark, of the same company, secretary of the Illinois Gas Association, will represent the service company at the annual convention of the American Gas Association to be held in New York the week beginning Oct. 13.

Cyrus W. Heath, president of the Indiana Gas Light Company died at his home in Noblesville, Ind., on Aug. 24 after an illness of several weeks.

Death of A. W. Littleton

Augustus W. Littleton died suddenly at his home in Oxford, England, on Aug. 26 in his seventy-first year. For many years Mr. Littleton was a resident of Quincy, Ill. He was a widely known gas engineer in his time. He was secretary of the Western Gas Association from 1882 to 1894, and was president of that association for the year 1896.

Kansas Gas & Electric Company declared the regular quarterly dividend of 1¾ per cent for the quarter ending Sept. 30. The dividend is payable on Oct. 1 to stockholders of record at the close of business Sept. 23.

There is outstanding $1,900,000 of preferred stock of the Kansas Gas & Electric Company, which is largely held in Kansas City and surrounding territory.